No. 697,876. Patented Apr. 15, 1902.

# J. C. PARMERLEE.

## HEATING AND COOKING STOVE.

(Application filed Sept. 26, 1901.)

(No Model.)

Fig. 1.

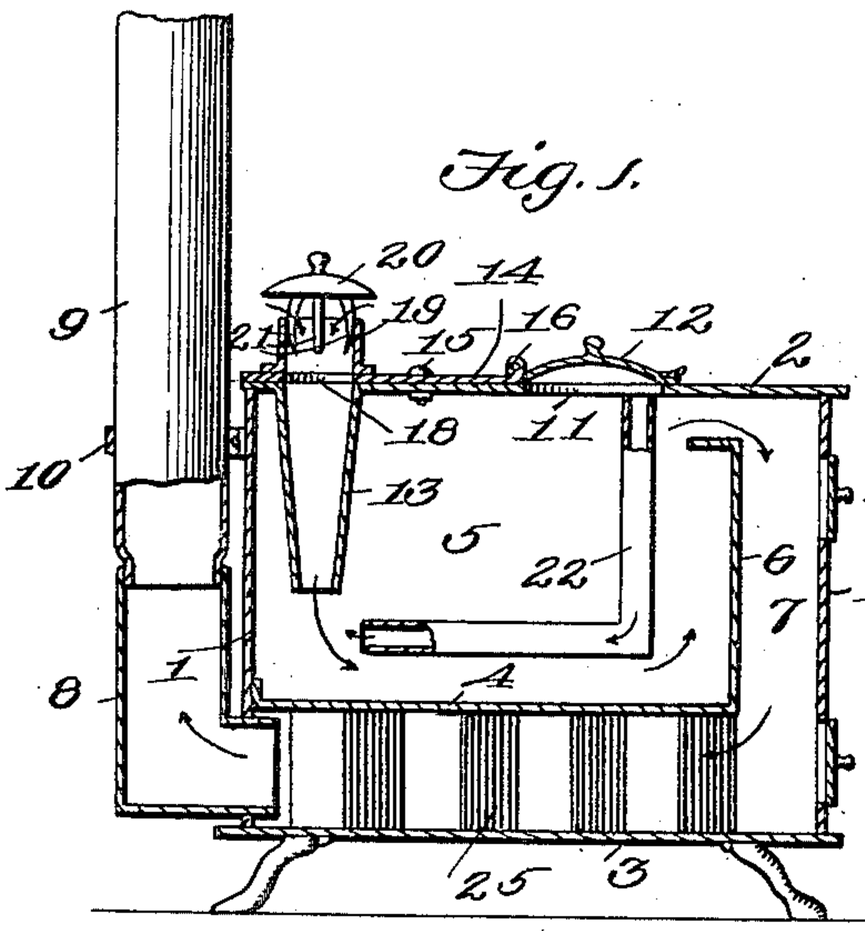



Fig. 3.

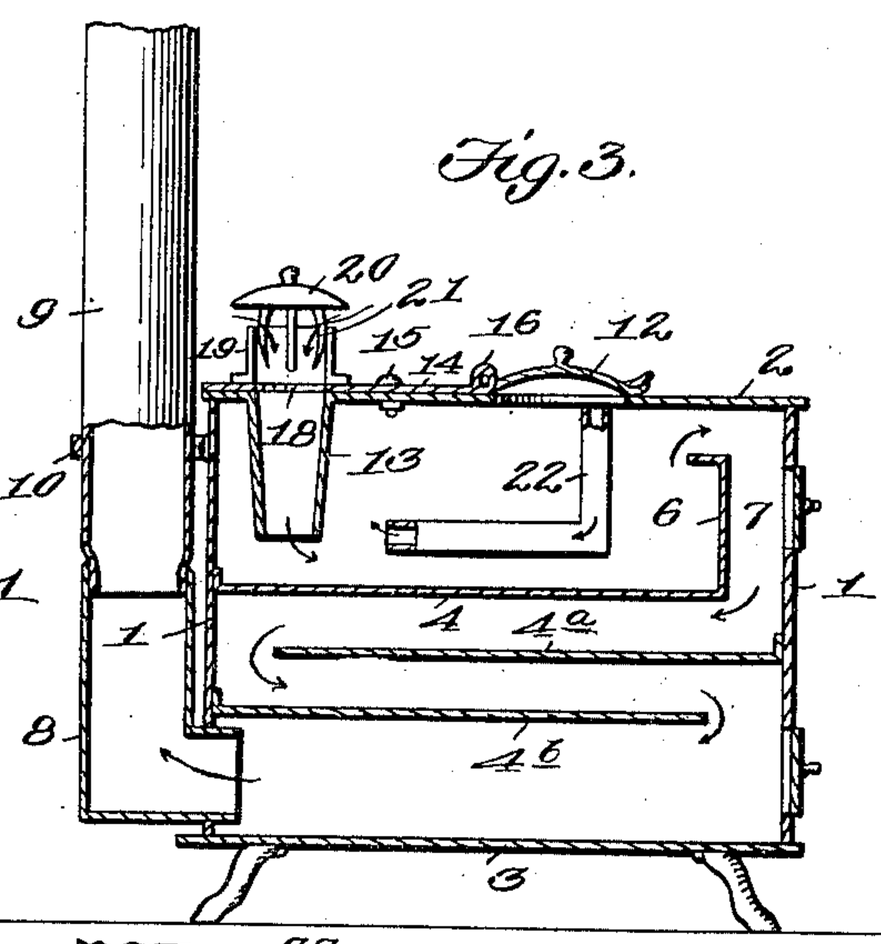



Fig. 2.

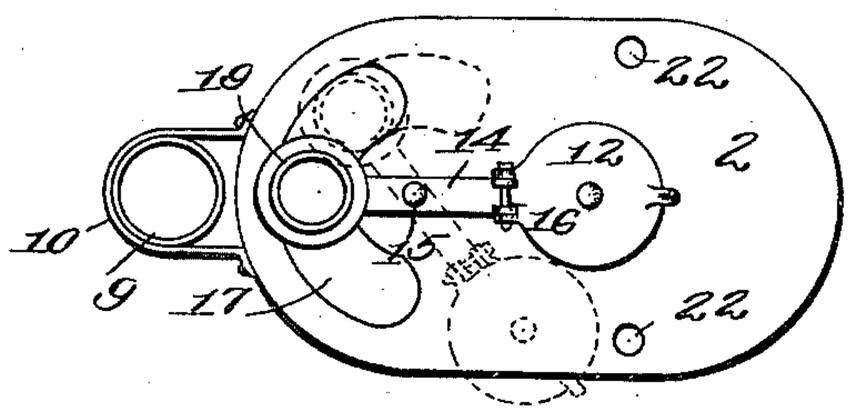



Fig. 4.

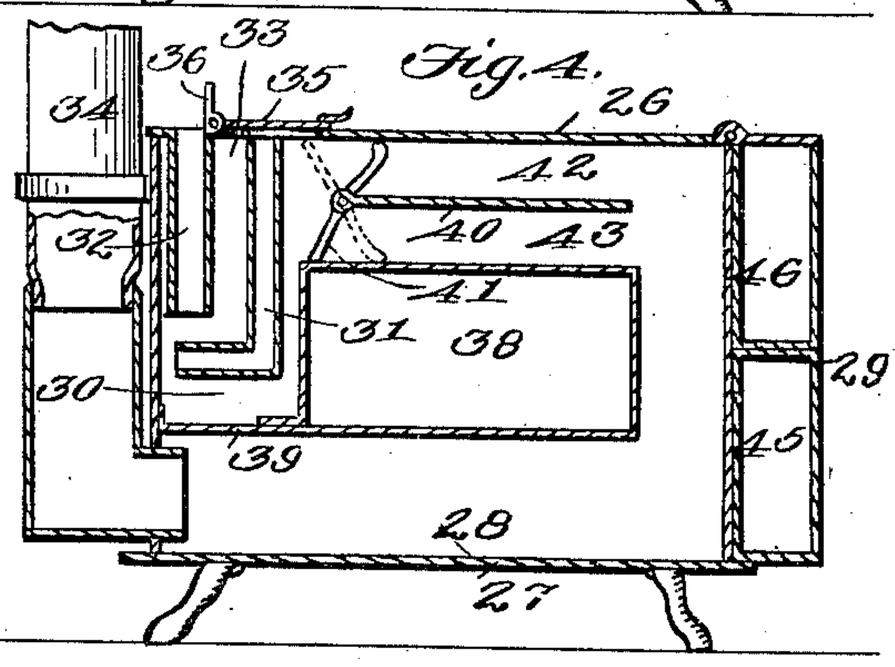



Fig. 8.

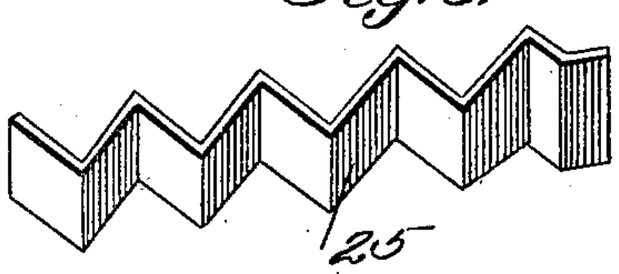



Fig. 6.

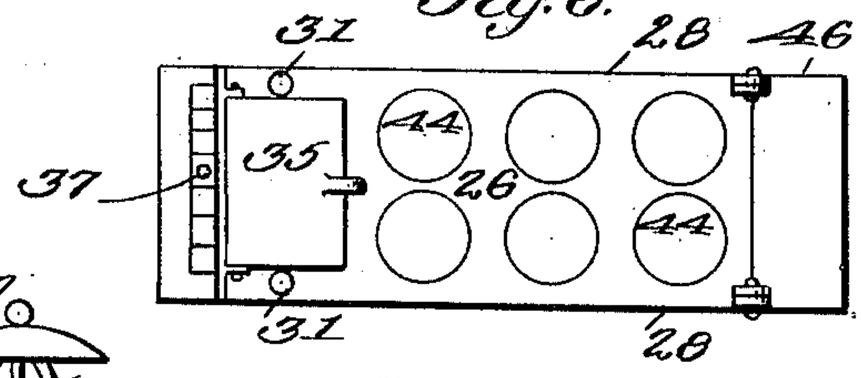



Fig. 7.

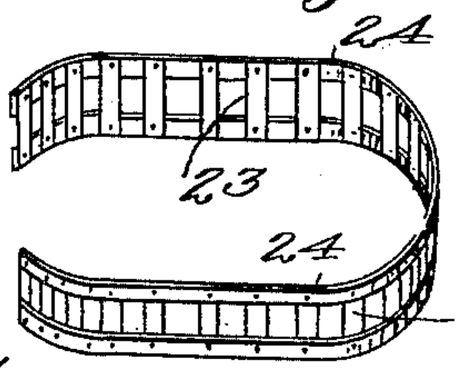
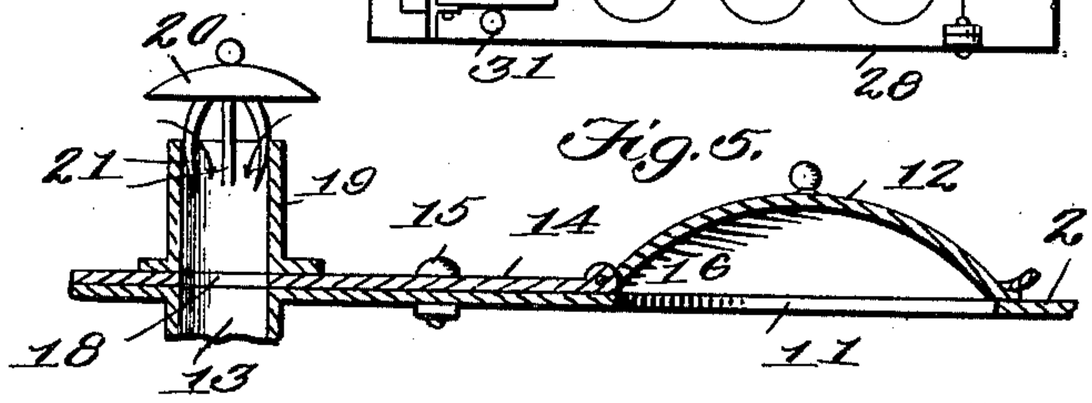



Fig. 5.

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# UNITED STATES PATENT OFFICE.

JAMES C. PARMERLEE, OF SEDALIA, MISSOURI.

## HEATING AND COOKING STOVE.

SPECIFICATION forming part of Letters Patent No. 697,876, dated April 15, 1902.

Application filed September 26, 1901. Serial No. 76,672. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES C. PARMERLEE, a citizen of the United States, residing at Sedalia, in the county of Pettis and State of Missouri, have invented new and useful Improvements in Heating and Cooking Stoves, of which the following is a specification.

This invention relates to heating and cooking stoves, and has for its object to provide a stove wherein the combustion will be prolonged and rendered more efficient and the passage of the heat through the body of the stove will be retarded until a large portion of it will become absorbed by the surrounding atmosphere, to increase the percentage of radiation from the walls and especially the bottom of the stove, thereby heating the floor and the lower strata of the air.

It also has for its object to provide improved means for feeding air to the combustion-chamber of the stove.

It has for a further object to provide improved means for feeding fuel to the combustion-chamber and simultaneously cutting off the supply of atmospheric air thereto.

Finally, my invention has other objects in view, which will become apparent hereinafter.

To the several ends stated my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a vertical longitudinal sectional view of a heating-stove constructed in accordance with my invention. Fig. 2 is a top plan view thereof. Fig. 3 is a view similar to Fig. 1, illustrating a modification. Fig. 4 is a similar view illustrating a cooking-stove. Fig. 5 is a detail sectional view illustrating the cover for the fuel-feed opening and the draft-regulator. Fig. 6 is a top plan view of the stove shown in Fig. 4, and Figs. 7 and 8 are detail views of supports employed for holding the stove-shelves in place.

Referring to Figs. 1 and 2 of the drawings, the numeral 1 indicates the vertical sides of the stove, which may be of any approved shape and size, 2 the top, and 3 the bottom thereof. Arranged within the body of the stove and above the bottom 3 is a horizontal shelf or partition 4, forming a support for the fuel, said shelf, in connection with the sides, top, and one end of the stove, constituting a combustion-chamber 5. Rising from one end of the shelf 4 is a vertical partition 6, and said shelf and partition, in connection with one end and the bottom of the stove, form a circuitous flue 7, that communicates at one end with the combustion-chamber and at its other end is in communication with a stovepipe-elbow 8, from which latter leads off a stovepipe 9. The latter may be conveniently supported in place by a metallic strap 10, fastened to the end of the stove. Fuel is fed to the combustion-chamber 5 through a feed-opening 11, formed in the top of the stove, and said opening is normally closed by a hinged cover 12, more fully hereinafter referred to. Air is admitted to the combustion-chamber through a downdraft or pendent feed-tube 13, which is fitted at its upper end in a suitable aperture formed in the top 2 of the stove and projects down into the forward end of the combustion-chamber.

Arranged on the top of the stove is an oscillating arm or lever 14, which is pivoted intermediate its ends to the stove-top by a pivot-bolt 15, about which it may be freely oscillated in a horizontal plane. The cover 12 of the fuel-feed opening is hinged at one edge, as at 16, to one end of the arm, as shown, and to the other end of said arm is fixed a segment-shaped plate 17, which when the arm is swung to one side or the other, as shown by dotted lines in Fig. 2, covers the upper end of the air-feed tube 13. The said plate is provided centrally with an aperture 18, over and about which is preferably fixed a short sleeve or tube 19, the arrangement being such that when the cover 12 is closed or over the fuel-feed opening 11 the sleeve or tube 19 will lie over and form a continuation of the air-feed tube 13. Air may then pass down said feed-tube into the combustion-chamber. The volume of air fed through said feed-tube to the combustion-chamber is regulated by a damper or draft-regulator, shown in the present instance as consisting of a cap or hood 20, adjustably fitted in the tube or sleeve by spring-fingers 21. It will be evident that by raising or lowering the hood the quantity of air per-

mitted to pass through the tube 19 in a given time can be controlled.

For the purpose of supplying the combustion-chamber with heated air I provide combined heating and feed tubes 22. In the present invention these tubes are shown as consisting of two pipes arranged, respectively, on the opposite sides of the combustion-chamber and each bent at a right angle, the vertical portions of said tubes extending up through the rear portion of the combustion-chamber and through suitable apertures in the top of the stove, where they communicate with the atmosphere. The horizontal members of said tubes project forward above the bottom of the combustion-chamber and have their discharge ends disposed in the lower forward portion of the latter.

Any suitable means may be employed for holding the shelf 4 in place. For example, a support, such as shown in Fig. 7, may be employed, said support consisting of vertical bars 23, joined together at top and bottom by connecting straps or hoops 24. This is adapted to rest on the bottom of the stove, and the shelf in turn rests on the upper edge of the same. Also a corrugated sheet 25 (see Fig. 8) may be employed as an additional central support for the shelf. It will be manifest that the shelf may be supported in place in various different ways, and such support forms no part of the present invention.

The operation of my improved stove, constructed as above described, is as follows: The fire may be started in the combustion-chamber with paper or kindling in a usual manner, the blaze being started to one side of the lower end of the air-feed tube 13. The heated air and products of combustion rise toward the closed top of the stove and in contact with the outer wall of the feed-tube 13, which latter supplies a downward draft of air to the combustion-chamber. The heated air seeking to escape from the combustion-chamber is partly forced by the pressure of the denser column of cold air down through the air-feed tube and partly drawn by suction of the column of ascending air in the stovepipe and chimney, thereby creating a vigorous circulation or draft. Fuel is introduced into the combustion-chamber through the fuel-feed opening 11, and as the cover 12 is swung to one side to uncover said feed-opening the plate 17 is automatically moved into position to close the air-feed tube 13, and thus prevent the escape of smoke and products of combustion. The tubes 22 become heated, and the air entering the combustion-chamber therethrough is heated, so that the combustion of the fuel is rendered more perfect by the supply of heated oxygen thus admitted to the combustion-chamber. The heated air and products of combustion after leaving the combustion-chamber are compelled to pass down one end of the stove and over the bottom of the latter by the circuitous flue 7, thus effectually heating the floor and the lower strata of air before the heated products escape through the stovepipe. In the arrangement shown the course of the air currents or draft through the stove is reversed. The walls of the downdraft air-feed tube operate to keep apart bodies of air of different temperatures in the stove until complete circulation is established, and by causing the heated air to circulate through the circuitous flue in the manner shown the heated air is retarded, so that a large percentage of it becomes absorbed by the surrounding atmosphere and the percentage of radiation from the walls, especially the bottom of the stove, is increased, thereby heating the floor and the lower strata of air, and the escape of the superheated air off through the chimney is prevented. It will be noted that by means of the hinged connection between the cover 12 and its arm 14 said cover may be raised from off the aperture without closing the air-feed tube whenever it may become necessary or desirable.

In Fig. 3 of the drawings I have shown a heating-stove constructed in all respects like that shown in Figs. 1 and 2, excepting that the flue leading from the combustion-chamber to the stovepipe is made more circuitous by the insertion of additional shelves or partitions $4^a$ $4^b$, whereby the passage of the heated air and products of combustion is still further retarded. The operation is the same as that before described.

In Figs. 4 and 6 I have shown my invention applied to a cooking-stove. Referring to said figures, the numeral 26 indicates the top of the stove; 27, the bottom; 28, the sides, and 29 the ends thereof. The numeral 30 indicates the combustion-chamber; 31, the combined air feeding and heating tubes; 32, the downdraft air-feed tube; 33, the fuel-feed aperture, and 34 the stovepipe. All the above parts are constructed in approximately the manner before described, excepting that the dimensions of some of the parts have been altered to suit the purpose in hand. The numeral 35 indicates the cover for the fuel-feed aperture, which is hinged to the top of the stove and is provided with a right-angular extension 36, which constitutes a closure for closing the upper end of the air-feed tube 32. An ordinary stove-damper 37 is fitted in the upper end of the air-feed tube 32, by means of which the admission of air to the combustion-chamber, through said tube can be regulated and controlled. It will be readily understood that the closure 36 normally stands open or elevated from off the air-feed tube and the cover 35 closed. When the latter, however, is raised to feed fuel to the combustion-chamber the closure will be closed over the upper end of the air-feed tube and prevent the escape of smoke through the latter. Arranged centrally within the body of the stove is an oven 38, that extends transversely from side to side of the stove, the shelf 39, forming the bottom of the oven, being extended to the end of the stove to form a fuel-sup-

port and the bottom of the combustion-chamber. Disposed between the top of the stove and the top of the oven is a horizontal partition or shield 40, that extends transversely from one side of the stove to the other, and hinged to that end of said partition or shield nearest the combustion-chamber is a double-acting damper 41. The partition or shield divides the space between the oven and the top of the stove into two flues 42 and 43. When the damper is turned to the position shown in full lines in Fig. 4, the flue 43 will be closed and the heated air and products of combustion will then pass through the flue 42 around the end of the oven and underneath the oven to the stovepipe. The other end of the oven is heated directly from the combustion-chamber. The partition 40 will then act as a shield to screen the top of the oven from the direct action of the heated air and products of combustion. When, however, the damper is turned to the position shown by dotted lines, the flue 42 will be closed and the heated air and products of combustion will then pass through the flue 43 and directly over and in contact with the oven, thence around the end of the latter and underneath it to the stovepipe. The course of the air-currents is the same as that before described with reference to the heating-stove and the operation is the same. The top of the stove is provided with the usual stove openings and lids 44, and may also be provided at one end with a hot-water reservoir 45 and a warming-chamber 46.

In each of the different forms of stoves illustrated it will be noted that atmospheric air is fed to the combustion-chamber through a downdraft-tube passing through the top of the stove at one end of the latter, that the heated air and products of combustion are then carried across the top of the stove to the opposite end, thence over the bottom of the stove and under the combustion-chamber to the stovepipe, which latter conducts off the spent air, smoke, and gases from the same end of the stove in which the atmospheric air was fed. The heated air and products of combustion are thus compelled to make the circuit of all sides of the stove, whereby the maximum heating efficiency of the fuel is obtained; also, that in each form of stove currents of heated oxygen or air containing oxygen are supplied to the combustion-chamber.

Having described my invention, what I claim is—

1. In a stove, the combination with the combustion-chamber, of air-feed tubes projecting through the top of the stove vertically into said chamber in the path of the flames and escaping products of combustion and provided with horizontal discharge branches extending through the fuel-space of the combustion-chamber and over the bottom of the latter, the upper ends of said feed-tubes being in communication with the atmosphere, substantially as described.

2. In a stove, the combination with the combustion-chamber; of air-feed tubes projecting vertically into said chamber through the top of the stove and provided with horizontal discharge branches extending through the fuel-space of the combustion-chamber and over the bottom of the latter, whereby the air fed by said tubes is heated before it is discharged into the chamber, a tube extending through the top of the stove and projecting into the combustion-chamber, the said tube operating to feed air at the temperature of the atmosphere into the combustion-chamber in proximity to the discharge ends of the hot-air-feed tubes, and means for regulating the passage of the air through the said pendent tube, substantially as described.

3. In a stove, the combination with the combustion-chamber of air-feed tubes projecting vertically into said chamber through the top of the stove and provided with horizontal discharge branches extending through the fuel-space of the combustion-chamber and over the bottom of the latter, the upper end of said feed-tubes being in communication with the atmosphere and a circuitous flue for conducting the heated air and products of combustion from said chamber to and over the bottom of the stove and underneath said combustion-chamber said flue operating to cause the heated air and products of combustion to pass in a direction opposite to which the heated air passes through the horizontal branches of said feed-tubes, substantially as described.

4. In a stove, the combination with the combustion-chamber, of an air-feed tube projecting into said chamber through the top of the stove and provided with a draft-regulator, a circuitous flue for conducting the heated air and products of combustion from said chamber to and over the bottom of the stove and beneath the combustion-chamber, and means for introducing heated air through the fuel into the combustion-chamber near the discharge end of the air-feed tube, substantially as described.

5. In a stove, the combination with the combustion-chamber, of an air-feed tube projecting into said chamber through the top of the stove, said stove-top being provided with a fuel-feed aperture, an oscillating cover for closing said aperture, and means automatically thrown into operation by the oscillating opening movement of said cover for closing the air-feed tube, substantially as described.

6. In a stove, the combination with the combustion-chamber, of an air-feed tube projecting into said chamber through the top of the stove, said stove-top being provided with a fuel-feed aperture, an oscillating cover for closing said aperture, means automatically thrown into operation by the oscillating opening movement of said cover for closing the air-feed tube, and a draft-regulator for controlling said air-feed tube, substantially as described.

7. In a stove, the combination with the com-

bustion-chamber and means for feeding atmospheric air thereto, of air-tubes leading from the exterior of the stove to and through the combustion-chamber in the path of the flames and escaping products of combustion and over the bottom of said chamber and arranged to deliver heated air into the latter, and a circuitous flue for conducting the heated air and products of combustion from said chamber to and over the bottom of the stove and beneath the combustion-chamber, substantially as described.

8. In a stove, the combination with the combustion-chamber and means for feeding atmospheric air thereto, of air-tubes arranged in the interior of the combustion-chamber, each of said air-tubes being bent at an angle and communicating at its upper end with the atmosphere through the top of the stove and arranged at its lower end horizontally over the bottom of the combustion-chamber to deliver heated air into the said chamber, the pendent portion of said tubes being arranged in the path of the flames and escaping products of combustion, and a circuitous flue for conducting the heated air and products of combustion from the combustion-chamber to and over the bottom of the stove and beneath the said chamber, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES C. PARMERLEE.

Witnesses:
C. P. KECK,
L. V. WARE.