3 Sheets--Sheet 1.

G. G. WOLFE.

Cooking-Stove.

No. 164,629. Patented June 15, 1875.

Fig. 1.

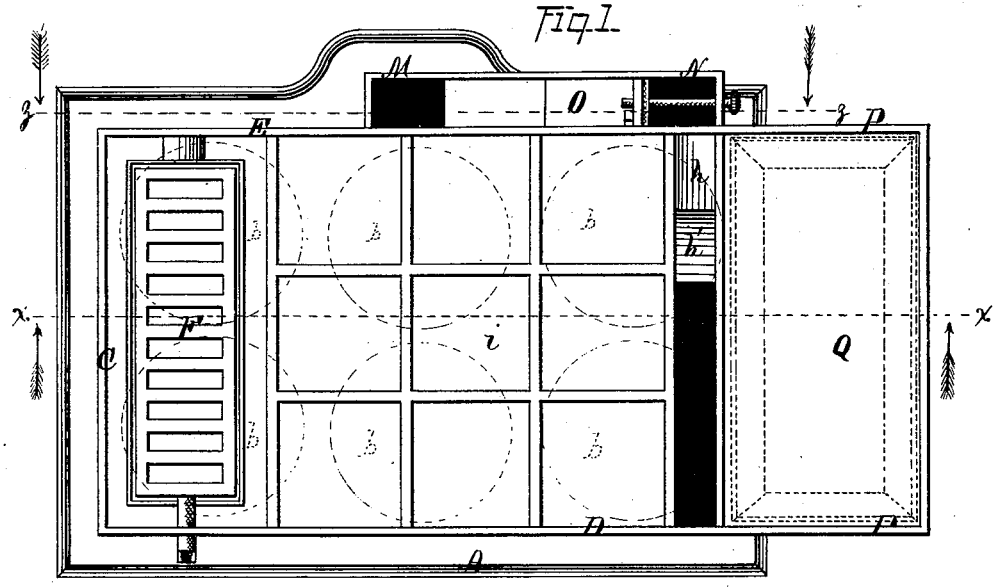

Fig. 2.

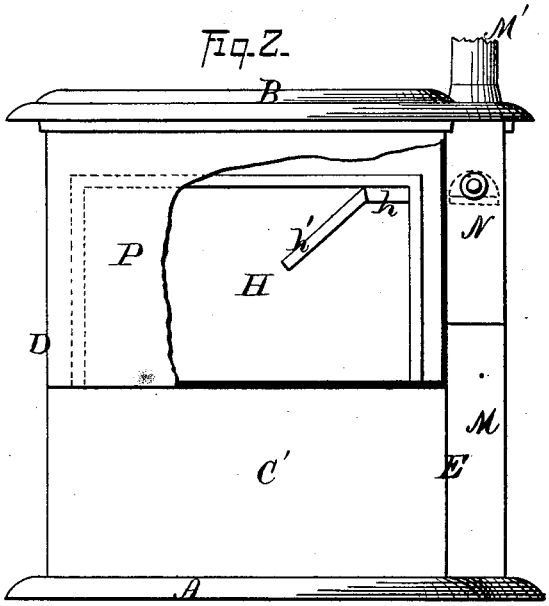

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Fig. 3.

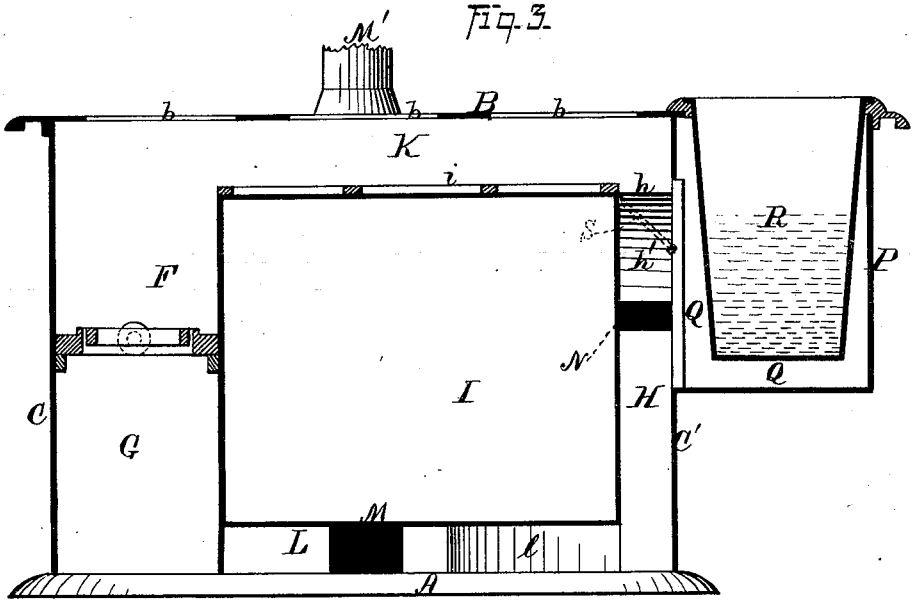

Fig. 4.

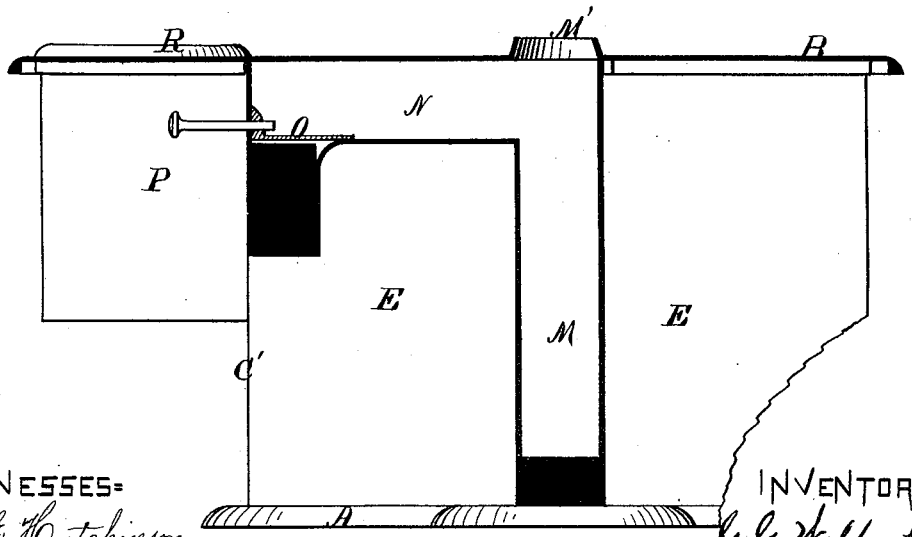

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Fig. 5.

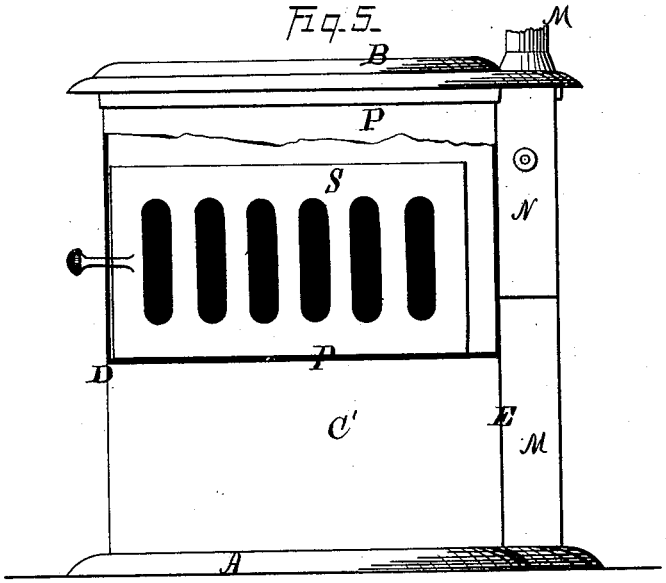
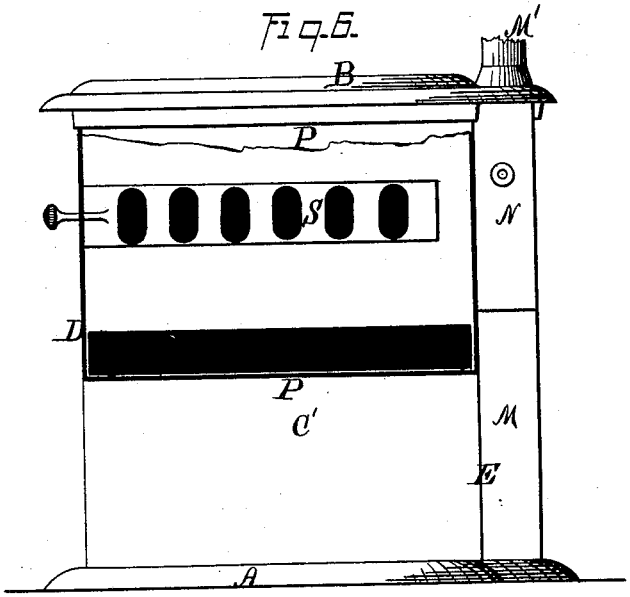


Fig. 6.



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UNITED STATES PATENT OFFICE

GURDON G. WOLFE, OF TROY, NEW YORK.

IMPROVEMENT IN RESERVOIR COOKING-STOVES.

Specification forming part of Letters Patent No. **164,629**, dated June 15, 1875; application filed February 27, 1875.

To all whom it may concern:

Be it known that I, GURDON G. WOLFE, of Troy, in the county of Rensselaer and in the State of New York, have invented certain new and useful Improvements in Reservoir Cooking-Stoves; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a plan view of the upper side of my range, the top plate being removed. Fig. 2 is an elevation of the rear end of the same, a portion of the reservoir-casing being removed, so as to show the opening through the end plate between the descending flue and reservoir-chamber. Fig. 3 is a vertical central section of said range upon line *x x* of Fig. 1. Fig. 4 is a vertical section upon line *z z* of said figure, looking from the rear; and Figs. 5 and 6 are elevations of the rear end of said range, showing modifications in the means of communication between the descending flue and reservoir-chamber.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to increase the efficiency, capacity, and economy of a cooking-range, having a fuel-chamber located at one end of the oven, a sheet-flue leading from said fuel-chamber between the top or boiler-hole plate and the top of said oven into a descending flue located at the opposite end of the latter, and also having the exit-flue in rear of said top or boiler-hole plate; and it consists, principally, in a direct-draft flue leading from the rear upper portion of the descending flue to the exit-flue, by means of which the heated escaping products of combustion are caused to pass beneath all of the boiler-holes, whether the direct or reverse draft is employed, substantially as and for the purpose hereinafter specified. It consists, further, in the arrangement of a horizontal partition or flue-plate between the upper or sheet-flue, the rear part of the descending flue, and the direct-draft flue, by means of which the current of heated gases is prevented from entering said descending flue at such point when the direct draft is employed, and heat is more evenly distributed beneath the boiler-holes, substantially as is hereinafter shown. It consists, further, in combining with the top oven-flue, descending flue, and exit-flue, the vertical or inclined flue-strip, which extends from the upper end of said descending flue downward, so as to compel the heated escaping products of combustion to descend in front of said flue-strip before passing into said exit-flue, by which means the force of the direct draft is increased, substantially as is hereinafter set forth. It consists, further, in the combination of a dampered opening between the upper portion of the descending flue and the direct-draft flue, by means of which the gases of combustion may be caused to pass from said descending flue into and through the flue or flues beneath the oven, or may be permitted to escape from said descending flue directly into said direct-draft flue, substantially as and for the purpose hereinafter shown and described. It consists, further, in a water-reservoir chamber located outside of and combined with a descending flue, which, at its rear upper portion, communicates with the direct-draft flue, substantially as and for the purpose hereinafter specified. It consists, further, in a water-reservoir chamber located beside and combined with a descending flue, which, at its rear side and upper end, is separated from the top oven-flue by means of a horizontal flue-strip, substantially as and for the purpose hereinafter shown. It consists, further, in a water-reservoir chamber located beside and combined with a descending flue, which has, at its rear upper portion, a vertical or inclined flue-strip, beneath which the heated escaping products of combustion are compelled to pass before passing into the direct-draft flue, substantially as and for the purpose hereinafter set forth.

In the annexed drawings, A represents the bottom plate, B the top plate, C and C′ the end plates, D the front plate, and E the rear plate, of a cooking-range, having a fuel-chamber, F, and ash-pit G located at one end, a descending flue, H, located at the opposite end, and between the said parts an oven, I, which extends from said front plate D to said rear plate E, and is accessible only at its front side. Between the top oven-plate *i* and the top plate B is formed a sheet-flue, K, which extends between the fuel-chamber F and the descending

flue H, and enables the heated escaping products of combustion to pass from the former into the latter. From the lower end of the descending flue H the heated gases pass into a sheet-flue, L, which is formed between the bottom of the oven I and the bottom plate A, and from thence into an ascending flue, M, that is formed at the rear side and longitudinal center of the range. A flue-plate, *l*, extending from the rear corner of the flue L diagonally outward to or beyond the center of said flue, causes the heated gases to be carried to the front corner of the same next to the ash-pit before permitting said gases to pass rearward to and into the ascending flue, by which means the whole lower side of the oven is heated uniformly. From the upper end of the ascending flue M, which flue is formed outside of the rear plate E, a flue, N, extends horizontally to the rear end C′, and then downward, and, at a point entirely below the top oven-plate *i*, connects with the descending flue H. A damper, O, of any desired form or manner of operation is located at some suitable point between said descending and ascending flues H and M, respectively, for the purpose of closing communication between the same through said flue N when desired.

As thus arranged, the operation of the flues is as follows: When the damper O is closed the heated escaping products of combustion pass from the fuel-chamber F into and through the sheet-flue K, down the descending flue H to the lower sheet-flue L, through the latter to the ascending flue M, and from the same to the exit-flue M′, during which journey said gases pass beneath each boiler-hole *b* within the top plate B, and around a sufficient portion of the oven I to enable the temperature of the latter to be raised to the desired point. When the damper O is open the heated gases from the sheet-flue K enter the descending flue H, and from the upper end of the same pass into and through the direct-draft flue N to the exit-flue M′, no portion of said gases being forced beneath the oven.

In order that the heated gases may be caused to have the same course through the sheet-flue, whether the direct or reverse draft is employed, a flue-strip, *h*, is extended across the upper end of the descending flue H, from the back plate E forward a short distance, and from thence a second flue-strip, *h′*, extends downward and forward to a point below the opening into the flue N, by which arrangement said gases are compelled to pass in front of said flue-strip in precisely the same manner, whether they afterward escape into the flue L beneath the oven or into the direct-draft flue N, the result being that in either event each boiler-hole receives the same percentage of heat.

It will be seen that the office performed by the flue-strip *h* is perfect in itself, but that the addition of the second flue-strip *h′* enables a much better result to be produced. The length of either said flue-strips or the angle of said strip *h′* may be varied, as experience suggests, their principle of operation remaining the same.

From a point upon a line with the top oven-plate *i* downward below the vertical center of the oven I, the end plate C′ is removed, so as to expose the descending flue H, and upon the outside of said plate is secured a casing, P, which incloses said opening, and forms a chamber, Q, for a water-reservoir, R, said reservoir having, preferably, such shape and dimensions as to cause a space to be left between its sides, ends, and bottom, and the corresponding portions of said casing.

The chamber Q, thus constructed, forms a part of the descending flue H, so that the heated gases within the latter expand into and circulate freely through the former, by which means water within the reservoir R is quickly heated, whether the direct or reverse draft is employed. When the direct draft is in use the flue-plates *h* and *h′* perform the same office for the water-reservoir R as in case of the oven I—viz., the diverting the current of heated gases from the rear side of the flue H, (to which said current would otherwise principally pass,) and causing said gases to be distributed across, and impart their heat to, the entire front of said reservoir.

Although the arrangement shown is preferably employed, the opening within the end plate C′ may, if desired, be dampered, as shown in Fig. 5, so as to permit the partial or entire exclusion of the heated gases from the chamber Q, and thereby enable the heating of the contents of the reservoir to be controlled.

Another arrangement (as seen in Fig. 3) consists in providing the upper portion of the opening in the end plate C′ with a damper, S, which is capable of being turned forward and downward across the flue H, so as to close the latter, and direct the heated gases into the upper portion of the chamber Q, and against the front of the reservoir R, from whence said gases would pass downward and again enter said flue, and either continue around the oven or pass to the exit-flue, as the reverse or direct draft was employed.

With this arrangement the oven could be heated without the reservoir, the reservoir without the oven; both could be heated at one time, or neither heated, as might be desired, the results named being secured wholly by the manipulation of the direct-draft damper O and end-plate damper S.

In case the flue-strips *h* and *h′* are omitted from the flue H, the opening to the direct-draft flue N should be located entirely below the bottom of the chamber Q.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. In combination with the descending flue H and exit-flue M′, the direct-draft flue N, leading from the rear upper portion of said descending flue to said exit-flue, by means of which the heated escaping products of combustion are caused to pass beneath all of the

boiler-holes, whether the direct or reverse draft is employed, substantially as and for the purpose specified.

2. In combination with the sheet-flue K, descending flue H, and direct-draft flue N, the horizontal flue-strip *h*, placed between the rear part of said flue H and the lower side of said flue K, and operating to prevent the current of heated gases from entering said descending flue at such point when the direct draft is employed, and to cause the heat to be evenly distributed beneath the boiler-holes, substantially as shown.

3. In combination with the sheet-flue K, descending flue H, and exit-flue N, the inclined flue-strip *h'*, which extends downward from the upper end of said descending flue H, and compels the heated escaping products of combustion to descend in front of said flue-strip before passing into said exit-flue N, substantially as and for the purpose set forth.

4. In combination with the descending flue H and direct-draft flue N, the damper O, operating to control the course of the heated escaping products of combustion, and cause the same to pass beneath the oven, or to escape from said descending flue directly into said direct-draft flue N, substantially as and for the purpose shown and described.

5. A water-reservoir chamber, Q, located outside of and combined with a descending flue, H, which at its rear upper portion communicates with the direct-draft flue N, substantially as and for the purpose specified.

6. A water-reservoir chamber, Q, located beside and combined with a descending flue, H, which at its rear side and upper end is separated from the top oven-flue by means of a horizontal flue-strip, *h*, substantially as and for the purpose shown.

7. A water-reservoir chamber, Q, located beside and combined with a descending flue, H, which has at its rear upper portion an inclined flue-strip, *h'*, beneath which the heated escaping products of combustion are compelled to pass before passing into the direct-draft flue N, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of January, 1875.

GURDON G. WOLFE.

Witnesses:
GEO. S. PRINDLE,
W. L. BENNEM.