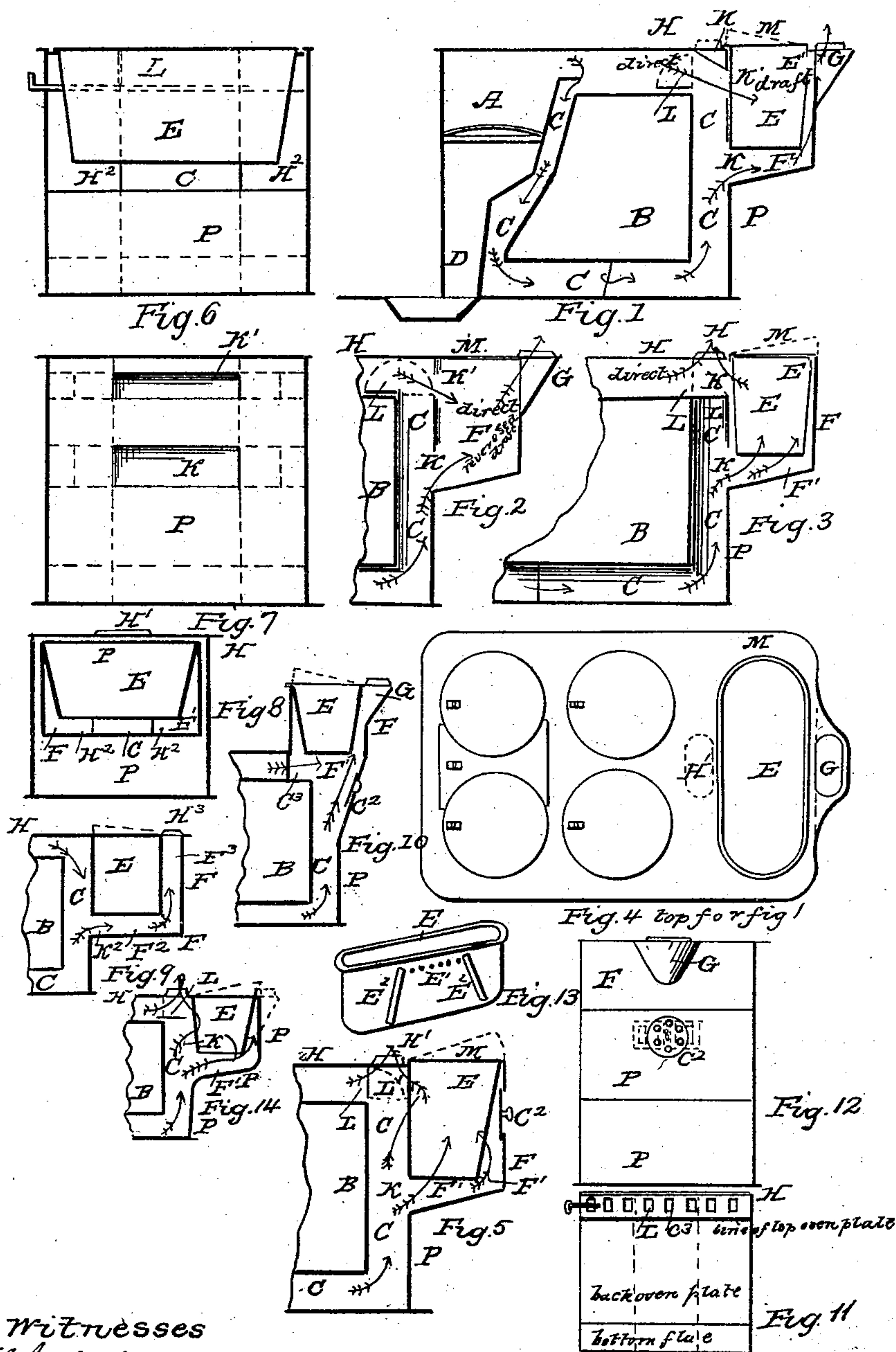


R. M. HERMANCÉ.  
Reservoir Cooking Stove.

No. 102,462.

Patented April 26, 1870.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN COOKING-STOVES.

Specification forming part of Letters Patent No. 102,462, dated April 26, 1870.

*To all whom it may concern:*

Be it known that I, RICHARD M. HERMANCÉ, of the city of Troy, county of Rensselaer and State of New York, have invented certain new and useful Improvements in Cooking-Stoves; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings and the letters of reference marked thereon, which drawings are made a part of this specification, and in which—

Figure 1 represents a vertical lengthwise section of a stove with an extended top, water-reservoir, or tank, shown inside of a chamber or flue-space, and the back plate thereof, having apertures to admit hot air and the products of combustion to said chamber, and the exit-pipe, shown back of the reservoir. Fig. 2 represents a vertical lengthwise section of a part of the back end of the stove, showing the flue-space or chamber, similar to Fig. 1, but having the water-reservoir removed. Fig. 3 represents a similar construction of the flue-space or chamber and water-reservoir, but having the exit-pipe placed forward of the water-reservoir and over the back flue or flues, as it may be, in a stove having either one, two, or three back vertical flues. Fig. 4 represents a horizontal view of the extended top plate of the stove, showing the opening for the reservoir, and the pipe-collar or exit-pipe back of the reservoir, and dotted lines showing the position of the exit-pipe when placed in front of the reservoir. Fig. 5 represents a vertical lengthwise section of a portion of the back end of a stove, showing the opening in the back plate of the stove enlarged, so as to reach from the bottom of the flue-space or chamber to the top plate of the stove. Fig. 6 represents a vertical transverse section of the same arrangement, and shown as adapted to a stove having one, two, or three back vertical flues. Fig. 7 represents the vertical rear-end plate of the stove, showing the apertures through which the hot air and products of combustion pass to the flue-space or chamber surrounding the reservoir. There are two of these openings shown; but they might be both united, and thus form one aperture, and they may also be extended each side, as shown by the dotted lines. Fig. 8 represents a vertical section of a water-reser-

voir not having the top plate of the stove extended. In this case, as shown, the water-reservoir rests on the top of the side and back walls of the chamber or flue-space, by means of a flange around the top of the reservoir, or some equivalent thereto. Fig. 9 represents a vertical section of a water-reservoir having a flue-space or chamber carried under and up the back of said reservoir, forming the covering of the horizontal portion, and the back wall of the reservoir forming the front wall of the vertical portion of said flue-space or chamber. Fig. 10 represents a vertical section of a stove, lengthwise of the back end, showing the water-reservoir, chamber, &c., placed above the top plate of the stove. Fig. 11 represents a vertical section of the same stove illustrated in Fig. 10, showing the sliding damper at the back of the stove. Fig. 12 represents an outside view of the vertical back-end plate of the stove and reservoir above, showing the check-draft damper. Fig. 13 represents the water-reservoir for this said stove in perspective, and separate from the stove, showing the apertures for the escape of steam, and the flanges formed thereon. Fig. 14 represents a peculiar construction of the back vertical plate of the stove, which is shown as bent, or so constructed that it may be a part or the whole of the casing which surrounds and forms the chamber within which the water-reservoir is situated. The foregoing illustrations are referred to to show the character, construction of parts, and manner of fully carrying my said invention into practical use and operation.

The nature of my invention, as embodied in this application, consists, first, in a casing surrounding a water-reservoir, when the reservoir is set in the top of the stove, and in the rear or at the back thereof. It further consists in a casing surrounding a water-reservoir when the same is placed above the top of the stove. It further consists in conducting the heat and products of combustion from a cooking-stove around the bottom and sides of a reservoir placed at the back of the stove, and in the top plate thereof, in such a manner that the same will circulate freely upon all sides of the said reservoir. It further consists in conducting the heat and products of combustion from a cooking-stove around the bottom and sides of



a reservoir placed entirely above the top of the stove, in such a manner that the same will circulate freely upon all sides of the said reservoir. It further consists in placing the exit-pipe of a three-flue or diving-flue cooking-stove in a casing surrounding a reservoir, so that the same may be heated by a direct draft. It further consists in removing or omitting a part of the back or vertical plate of a cooking-stove, thereby forming apertures to admit heated air, smoke, and the products of combustion from the rear or vertical flue or flues against a water-reservoir in the rear or back of the stove, and set in the top plate of said stove. It further consists in the location of a water-reservoir or culinary boiler, with regard to the back or vertical flues or flue of a cooking-stove, when said reservoir is situated in the rear of and wholly below the top extended plate adjoining the flues, and suspended by a rim or flange to or in said extended plate. It further consists in bending the rear or vertical plate of a cooking-stove above the bottom oven-plate, for the purpose of making a hot-air chamber on one or all sides of a water-reservoir. It further consists in the location, construction, and use of the check-damper, or its equivalent, in the rear vertical casing of the hot-air chamber, containing a water-reservoir, whether such chamber is below or above the top plate of the stove. It further consists in a diving-flue cooking-stove, with the exit-flue constructed across the bottom and up the rear upright side of a tank, reservoir, or other culinary vessel.

To enable others skilled in the art to make and use this invention, I will proceed to describe the same with reference to the drawings.

Figure 1 of the accompanying drawings represents a common three-flue cooking-stove, in which the top plate H is extended beyond the line of the back of the stove far enough to admit of an opening, M, of the size of the top of the water-reservoir E, and back of that another opening, G, forming the entrance to the exit-pipe. I prefer to place the said reservoir in this opening supported by a rim; but, if desirable, it may be placed under the extension of this top, which should then have an opening of convenient size for filling and emptying the reservoir. Under the extended top and around the reservoir I construct the casing F, Figs. 1 and 2, of sufficient size to permit a free passage of the products of combustion from the fire on all sides of the reservoir. In front of the casing is the opening K, by which the products of combustion are conducted from the middle flue C of the stove into said casing, and thence around the reservoir to the exit-pipe G. I prefer to place the exit-pipe at the back of the water-reservoir, as shown in the drawings, but it will be seen that if it is placed in front of the reservoir, at H<sup>1</sup>, there will be no difference in principle. F' is a hot-air chamber, entirely surrounding the water-reservoir or tank E. L, Fig. 1, is a damper, by the

opening and closing of which the draft is admitted to or excluded from the middle flue C of said stove. B is the oven, and A the fire-box, of the stove.

The products of combustion from the fire-box A pass over the top of the oven B to the damper L, or its equivalent. If the damper is open, the products of combustion are admitted to the middle flue C, and pass through the opening K, around the water-reservoir, to the exit-pipe G. When the damper is closed, the draft will pour down the side end flues and under the oven, thence up the vertical middle flue C, and so through the opening K to the exit-flue G, as before. Thus the water in the reservoir will be heated as well when there is a direct draft as when the same is conducted around and under the oven, and will be heated much more readily by the admission of the heat to all portions of the outside of the water-reservoir. The use of the extension top is so obvious as to need no explanation.

Fig. 10 shows a modification of my said invention, to be used when it is desirable to place the water-reservoir above the top of the stove, as follows: I construct the casing F substantially as above described, but above the top of the stove, and with an opening from the flue above the oven at L, and another opening from the middle vertical flue C, as at L', Fig. 5. The damper is so constructed that in one position it closes the opening at L, and in another position it closes the opening at L'. When it is wished to conduct a direct draft through the casing F, the damper is placed in a horizontal position, which closes the middle vertical flue C, and permits the products of combustion to go directly into the casing F. When the damper is turned into a vertical position, it closes the opening from the flue above the oven, and turns the draft down the side flues, to return through the middle vertical flue, and enter the casing around the reservoir at L.

In Fig. 1 is shown a reservoir arranged, so far as regards the flues, in a manner similar to that above described, the back plate of the stove having two apertures, K and K<sup>1</sup>, for the admission of heated air and products of combustion into the chamber in which the reservoir is placed. The water-reservoir E is shown as being placed close against the back vertical plate P of the stove. The same general plan is shown in Fig. 2, the reservoir having been removed.

In Fig. 3 the water-reservoir is shown as placed within the chamber F, in a manner similar to that just above mentioned, except that in this case the pipe-collar of the exit-pipe is placed forward of the reservoir in the casing, or directly over the back flue of the stove, as at H<sup>1</sup>. By raising or lowering the damper L, the heated air and products of combustion are carried into the chamber F, or escape through the exit-pipe H<sup>1</sup>, or are turned down through the descending flues shown at H<sup>2</sup>, Fig. 6, and return in the usual manner. When the exit-pipe is placed in front of the reser-



voir, the back edge of the top of the plate of the stove follows the course of the dotted lines on Fig. 4.

In Fig. 5 is shown a reservoir having a chamber, F, either surrounding the reservoir E in whole or in part, the back plate of the stove P having an aperture, K, extending from the bottom of the chamber F upward to the under side of the top plate of the stove H, (the said opening may be of any desired breadth or height,) the damper L regulating the currents of heated air, as described above.

In Fig. 7 is shown the back vertical plate of the stove, represented as having openings or apertures K and K<sup>1</sup>, and by dotted lines. These apertures may, as shown, be extended the whole width of the stove, or cut off before reaching the extreme width, as the manufacturer may deem best.

I do not confine my invention to a cooking-stove with an extended top over a reservoir, inasmuch as the heated air and products of combustion may pass through the opening K, Fig. 3, and be conducted into a chamber, F<sup>1</sup>, outside of and beyond the back vertical plate of the stove, as shown in said figure. A rim or flange is formed around the upper edge of the reservoir, so as to reach over and cover the chamber F<sup>1</sup>, and rest upon the walls F surrounding said chamber, the reservoir having a cover of any desired form. The cover may be on a horizontal line with the top plate of the stove or below the same.

Another arrangement is shown in Fig. 9. In this case a flue or chamber, F<sup>2</sup>, is extended backward from the back plate of the stove, and said back plate P having an aperture of suitable size, K<sup>2</sup>, through which the heated air and products of combustion are carried under the reservoir, the bottom of the reservoir forming the top of this horizontally-extended flue or chamber. And back of the reservoir this flue or chamber is continued vertically to the top line of the reservoir, and thence, through the exit-pipe, the products of combustion escape. The back wall of the reservoir forms the front of this flue or chamber F<sup>3</sup>, and the width or depth of this flue, as well as that of the flue F<sup>2</sup>, may vary to suit the convenience of the manufacturer. Fig. 10 is to show that the back damper C<sup>3</sup>, which is a sliding damper having apertures to be opened or partially opened to regulate the amount of heated air to be conducted into the chamber F, situated above the top plate H of the stove. The damper C<sup>3</sup>, instead of extending the whole width of the stove, may be extended only to cut off the middle flue, when the products of combustion will be carried into the chamber F<sup>1</sup> by means of the side flue H<sup>2</sup>, Fig. 6, to the exit-pipe G, Fig. 10.

In Fig. 12, as well as in Fig. 10, is shown a check-damper or regulator, C<sup>2</sup>, to reduce the excess of heat, should it become too great, and to make more uniform the temperature of the water in the reservoir E or air in the oven B. The damper C<sup>2</sup> may be constructed so as to

revolve, as shown by diagram, or slide, as shown by dotted lines.

In Fig. 13 the reservoir E is shown separate from the stove. Flanges E<sup>2</sup> are formed on the walls of this reservoir, which may be cast with the reservoir, and, by being of varying thickness and matching in suitable grooves in the chamber, may assist in supporting the reservoir E within the chamber F<sup>1</sup>. At E<sup>1</sup> are shown small apertures or perforations through the walls of the water-reservoir, for the purpose of allowing the steam to escape when the reservoir-lid is closed.

In Fig. 14 is shown a modification by which my invention may be adapted, viz., by bending or constructing the back vertical plate P, so that it may form a part of the casing F which surrounds and forms the chamber in which the water-reservoir is placed.

The arrows on the respective drawings are intended to represent the currents or direction of the passage of heated air and products of combustion.

Having thus described the nature and operation of my said invention and improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The employment of the casing F surrounding the reservoir E, when the reservoir is placed in the top of the stove and in the rear or at the back thereof, substantially as described and set forth.

2. The said casing F surrounding the reservoir E, when the same is placed above the top of the stove, substantially as described and set forth.

3. Conducting the heat and products of combustion from a cooking-stove around the bottom and sides of a reservoir, E, placed at the back of the stove and in the top thereof, in such a manner that the same will circulate freely upon all sides of the said reservoir, substantially as described and set forth.

4. Conducting the heat and products of combustion from a cooking-stove around the bottom and sides of a reservoir, E, placed entirely above the top of the stove, in such a manner that the same will circulate freely upon all sides of the said reservoir, substantially as described and set forth.

5. Placing the exit-pipe of a three-flue cooking-stove in the casing F surrounding a reservoir, E, so that the same may be heated by a direct draft, in the manner substantially as described and set forth.

6. The removal or its equivalent of the part of the back or vertical plate of a cooking-stove, thereby forming the apertures K and K<sup>1</sup>, to admit heated air, smoke, and the products of combustion from the rear or vertical flue or flues against a water-reservoir in the rear or back of the stove, and set in the top plate of said stove, substantially as described and set forth.

7. The arrangement and location of a water-reservoir or culinary boiler with regard to the back or vertical flues or flue of a cooking-stove,



when said reservoir is situated in the rear of and wholly below the top extended plate adjoining the flues, and suspended by a rim or flange to or in said extended plate, substantially as described and set forth.

8. The bending of the rear or vertical plate P of a cooking-stove above the bottom oven plate, for the purpose of making a hot-air chamber or its equivalent on one or all sides of a water-reservoir, substantially as described and set forth.

9. The location, construction, and use of the check-damper C<sup>2</sup> or its equivalent in the rear vertical casing of the hot-air chamber contain-

ing a water-reservoir, whether such chamber is below or above, or partly below and partly above, the top plate of the stove, substantially as described and set forth.

10. A diving-flue cooking-stove, with the exit-flue constructed across the bottom and up the rear upright side of the tank, reservoir, or other culinary vessel, substantially as described and set forth.

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Witnesses:

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