No. 660,662. Patented Oct. 30, 1900.

P. M. ST. LOUIS.

STOVE.

(Application filed Feb. 20, 1900.)

(No Model.) 4 Sheets—Sheet 1.

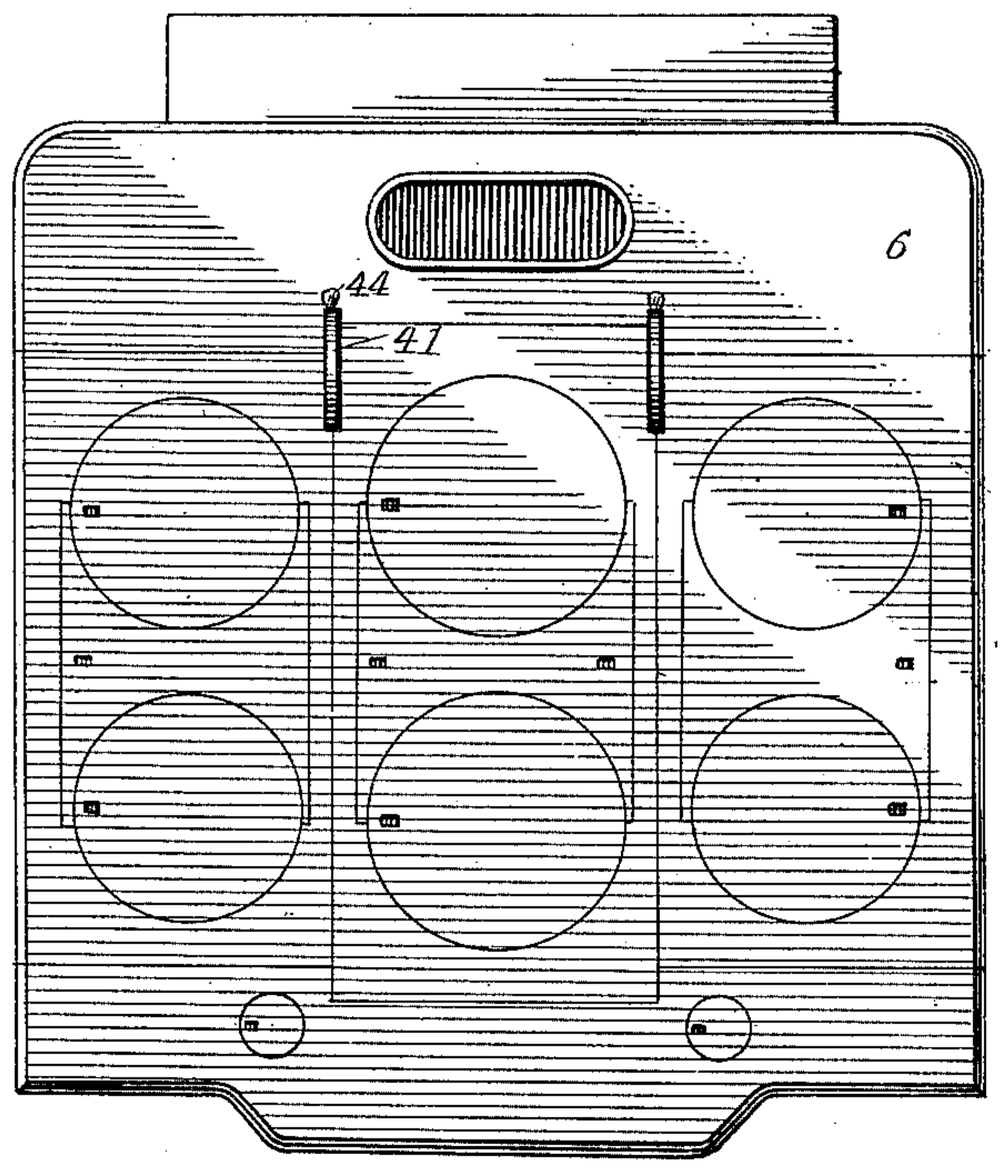

Fig. 1.

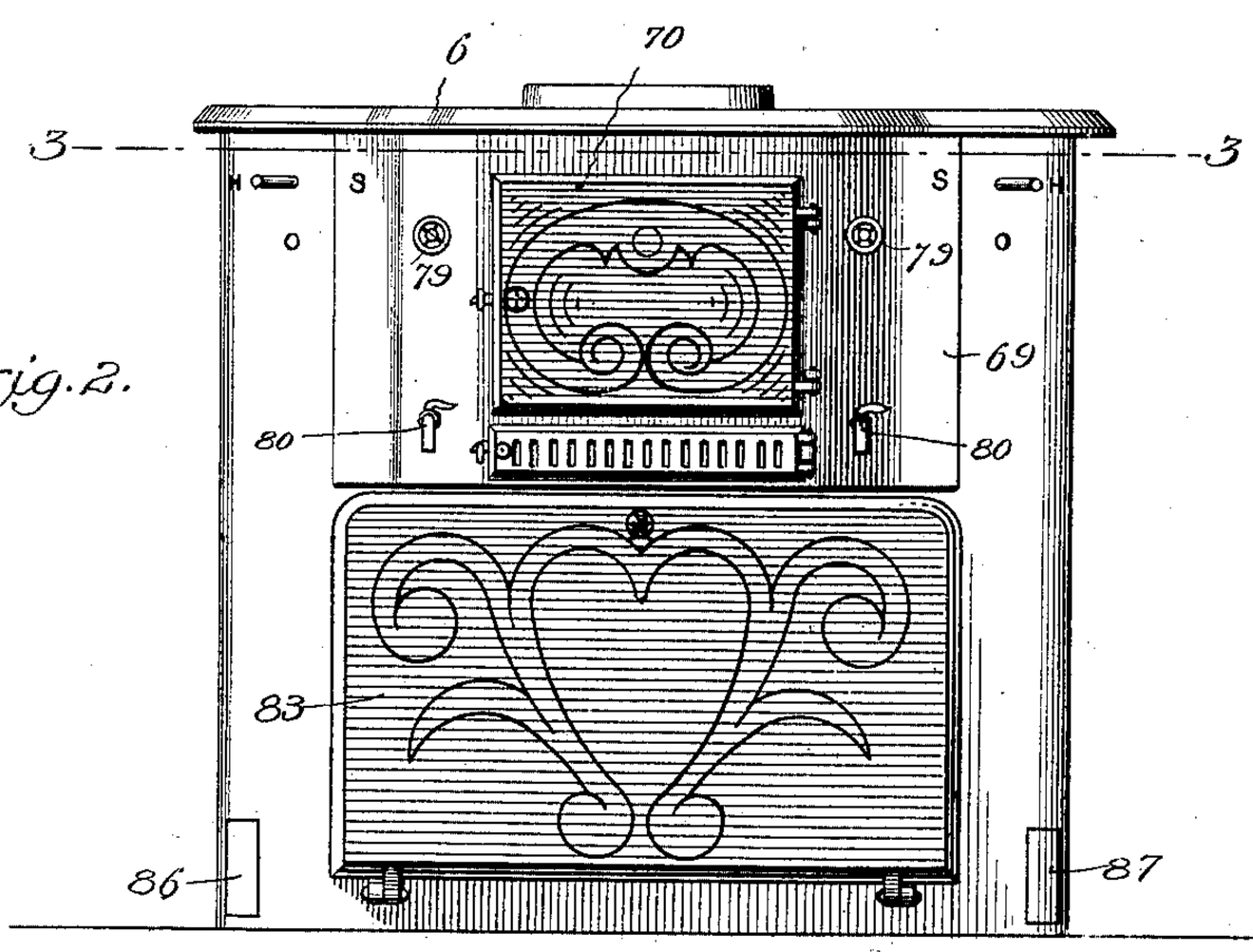

Fig. 2.

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4 Sheets—Sheet 2.

Fig. 3

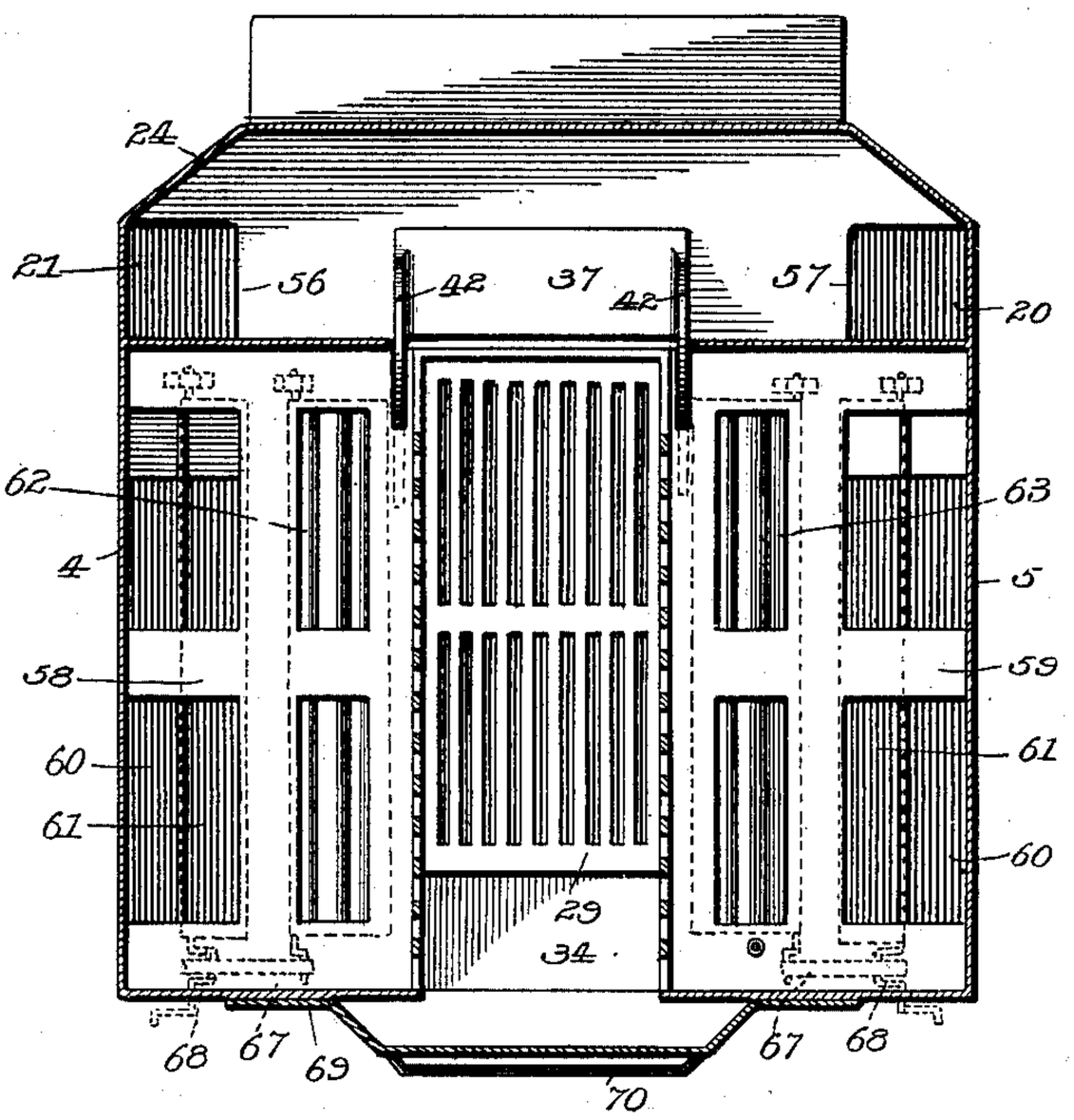
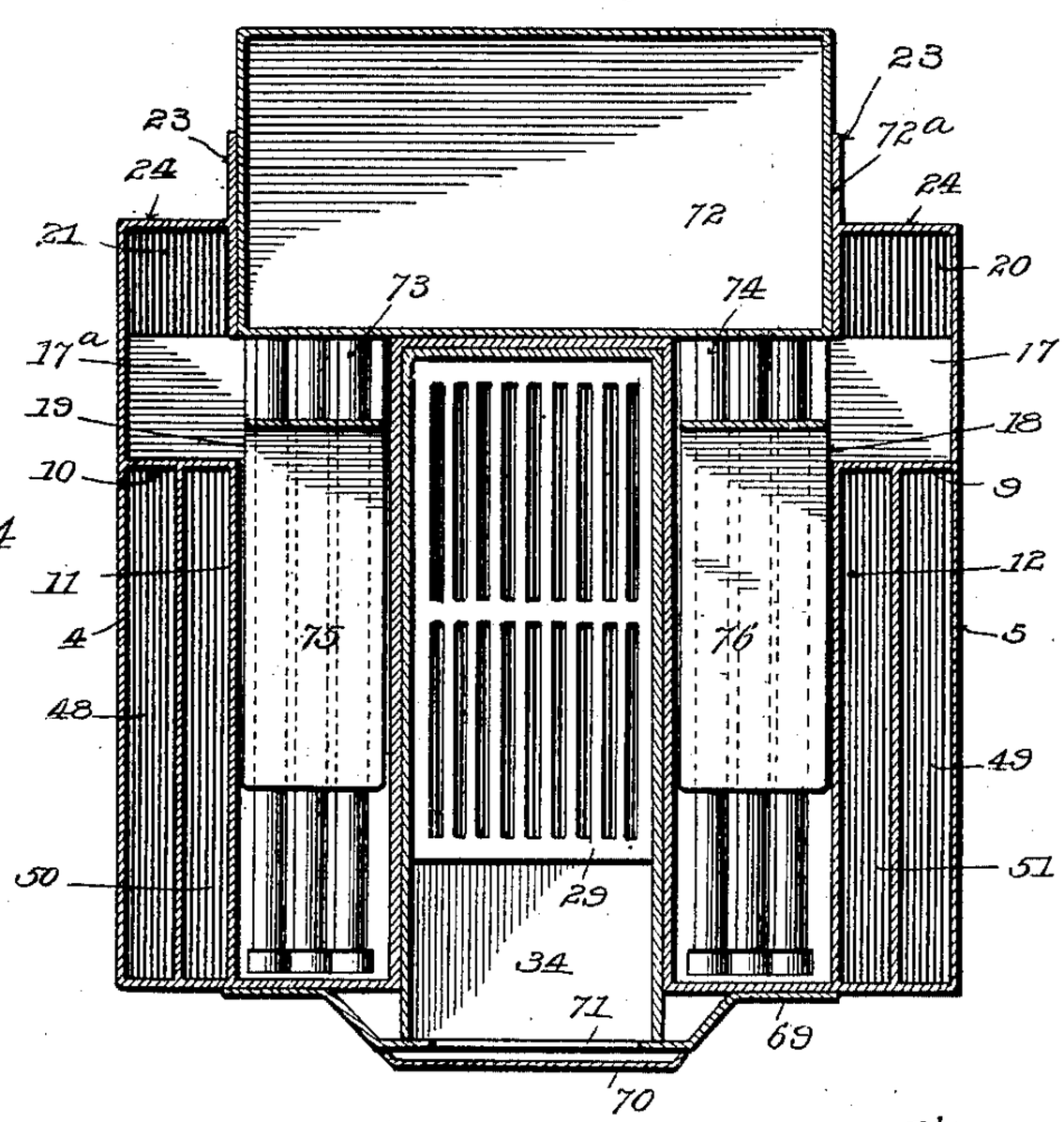


Fig. 4



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(No Model.) 4 Sheets—Sheet 3.

Fig. 5

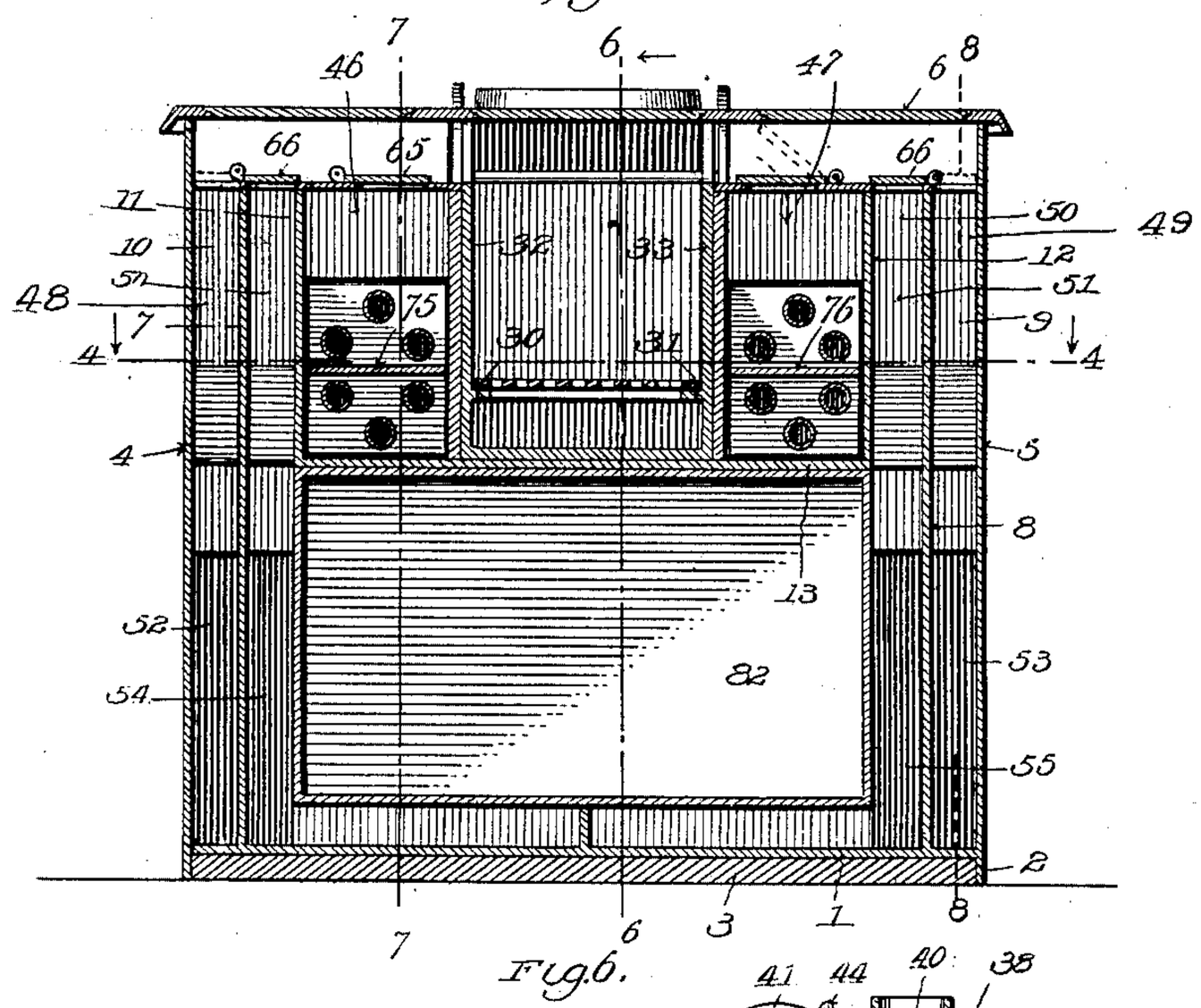

Fig. 6.

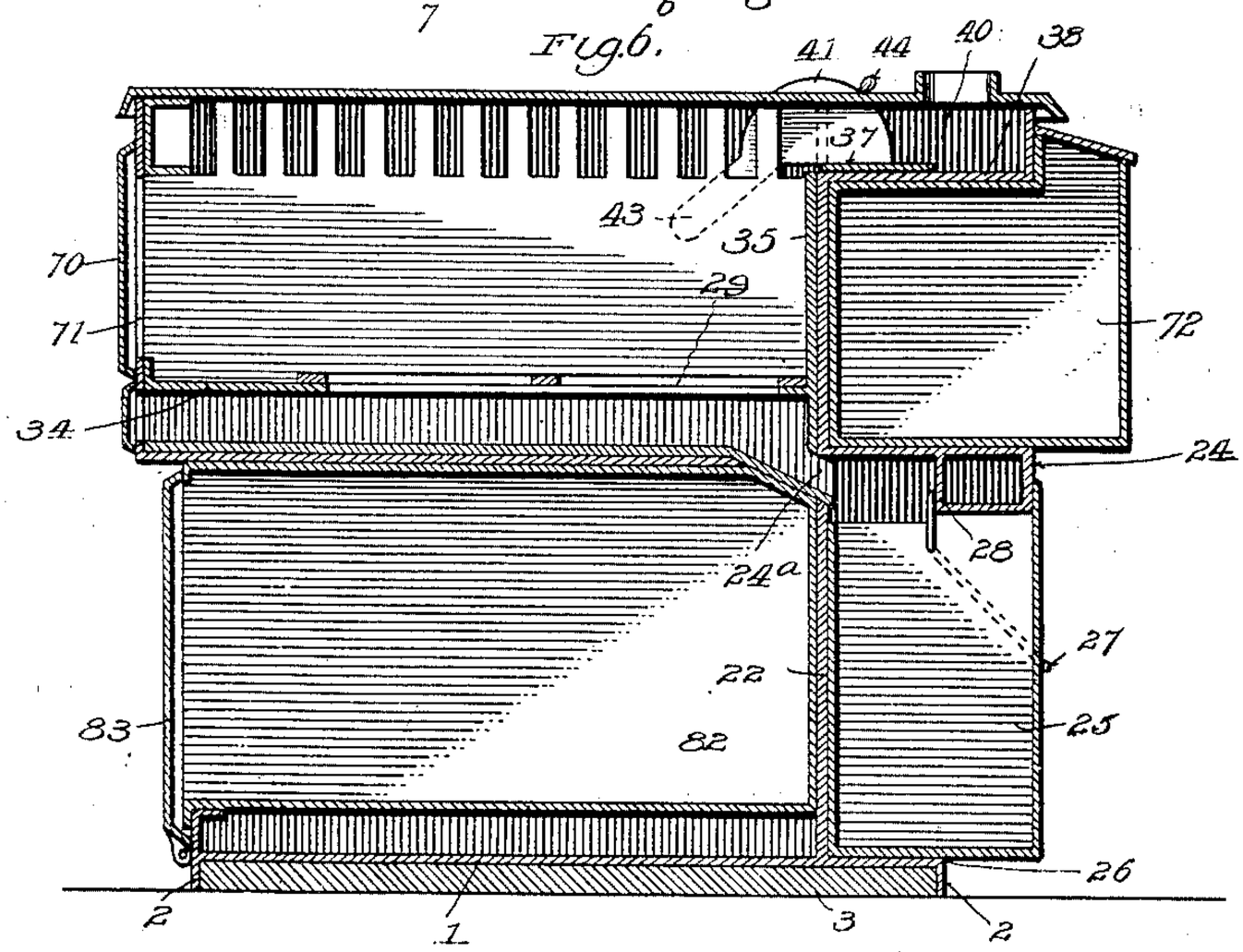

Fig. 11.

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(No Model.) 4 Sheets—Sheet 4.

Fig. 7.

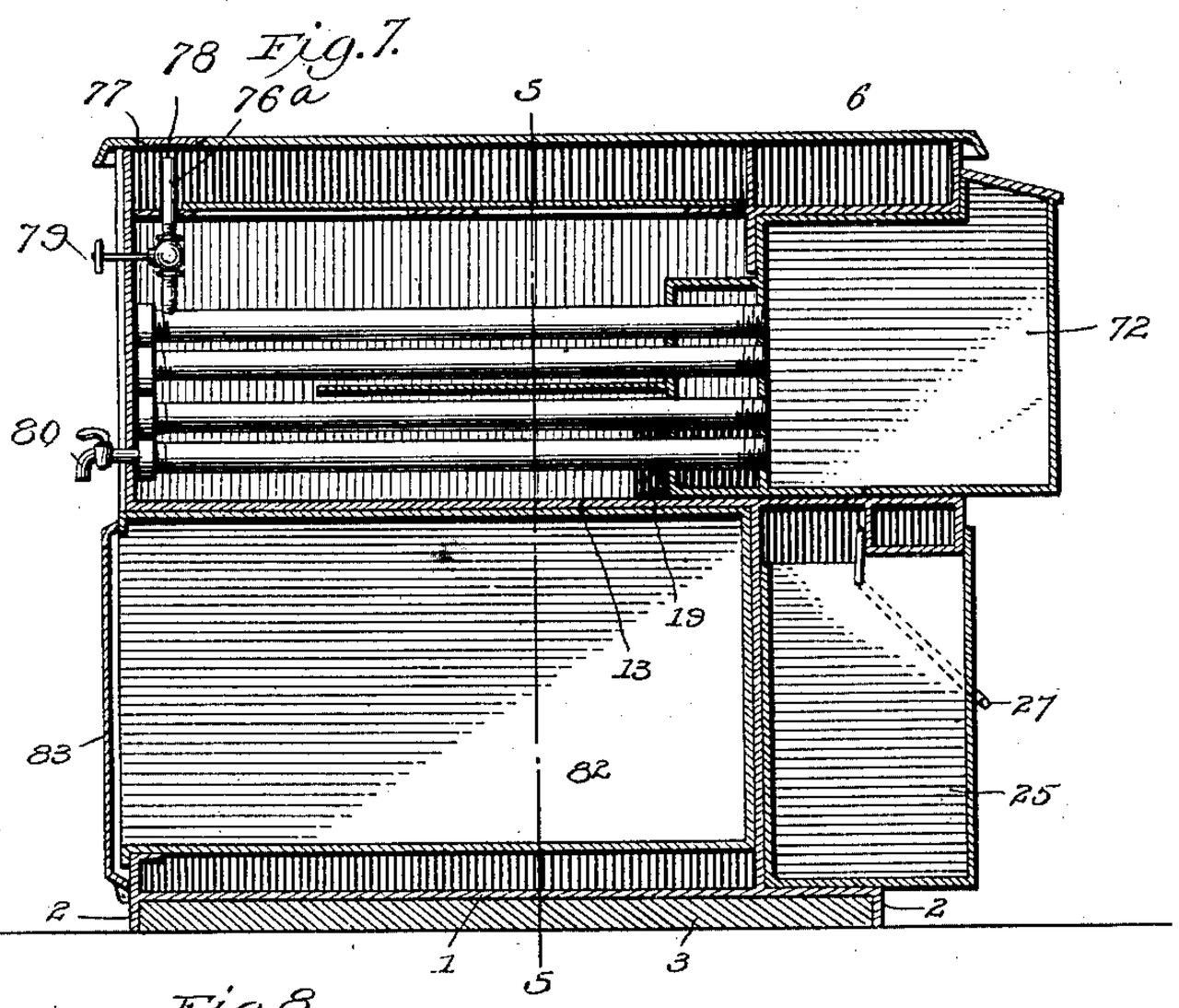


Fig. 8.

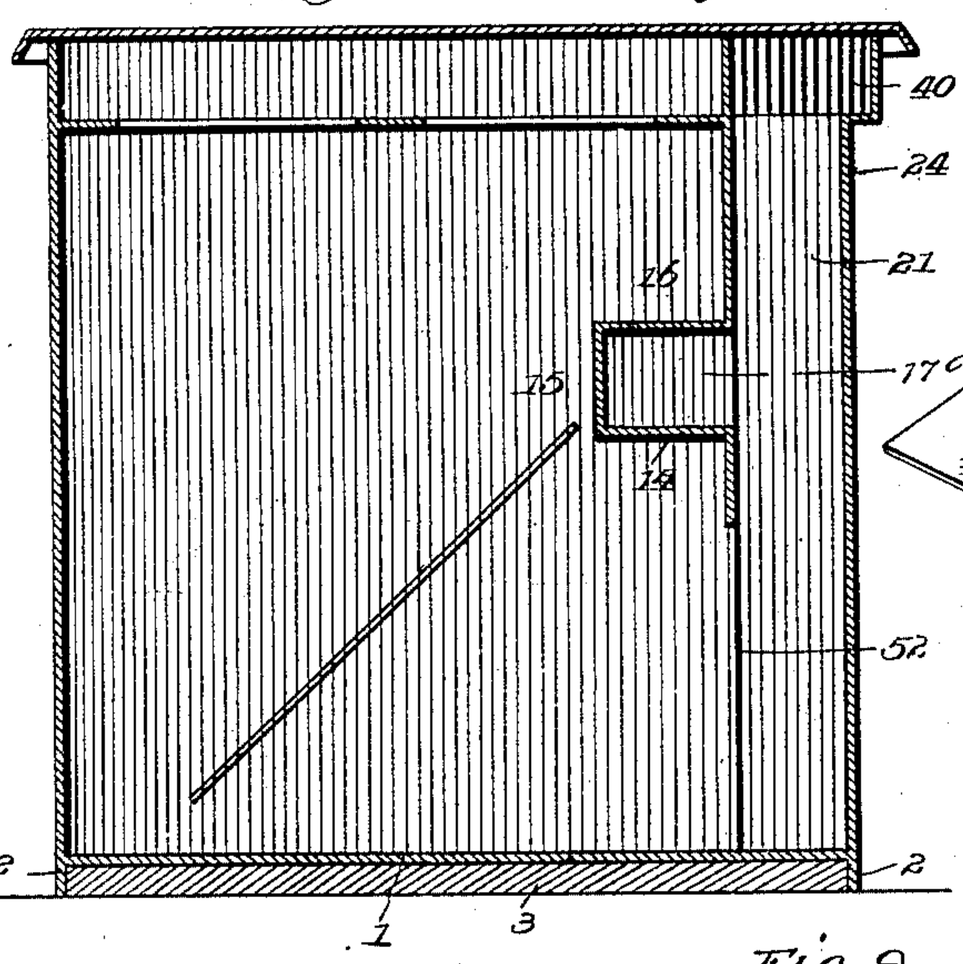
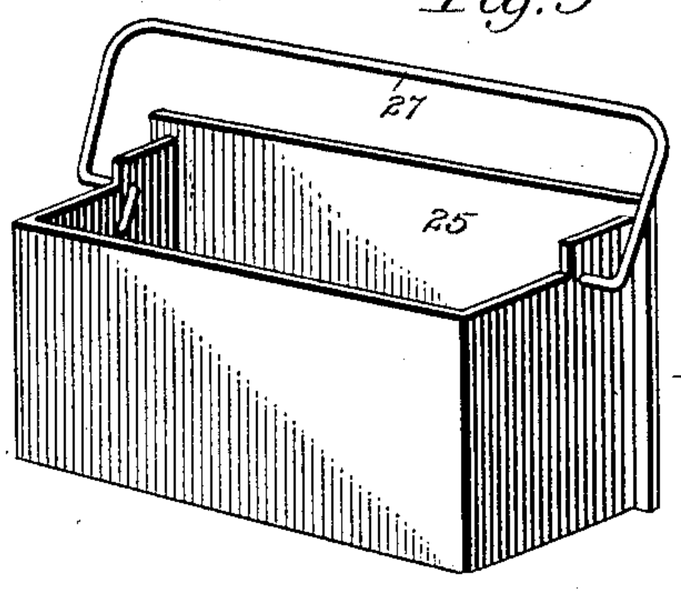


Fig. 9

Fig. 10.



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UNITED STATES PATENT OFFICE.

PHILIP MANNES ST. LOUIS, OF CARMEL, WISCONSIN.

STOVE.

SPECIFICATION forming part of Letters Patent No. 660,662, dated October 30, 1900.

Application filed February 20, 1900. Serial No. 5,928. (No model.)

To all whom it may concern:

Be it known that I, PHILIP MANNES ST. LOUIS, a citizen of the United States, residing at Carmel, in the county of Waupaca and State of Wisconsin, have invented certain new and useful Improvements in Stoves, of which the following is a specification.

My invention relates to a cooking-stove adapted to be also used as a heating-stove and water-heater; and the primary object is to so construct a stove of the character described that heat may be generated to raise the temperature of the surrounding atmosphere or ventilate the room, as is desired; also, to improve the draft-regulating mechanism for heating and cooling the oven.

A further object is to provide means for heating water for obvious purposes and, if desired, generate steam to cook articles of food which would be improved by contact therewith instead of being treated with a dry heat, and, finally, to provide a convenient and cleanly manner of freeing the stove of its ashes.

With these objects in view my invention consists in certain combinations of parts and minor details of construction, all of which will be fully described hereinafter, recited in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of a stove constructed in accordance with my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 2. Fig. 4 is a similar view on the line 4 4 of Fig. 5, but showing the entire stove. Fig. 5 is a transverse vertical sectional view on the line 5 5 of Fig. 7. Fig. 6 is a vertical longitudinal view on the line 6 6 of Fig. 5. Fig. 7 is a similar view taken on the line 7 7 of Fig. 5. Fig. 8 is a like view on the line 8 8 of Fig. 5. Fig. 9 is a detail perspective view of the ash-pan. Fig. 10 is a perspective view of one of the flue-partitions, illustrating the connections between the two longitudinally-arranged dampers. Fig. 11 is a detail perspective view of damper located in the rear of the fire-pot.

The base-plate 1 of the structure embodying my invention is provided with a downwardly-projecting flange 2, extending around its entire periphery and surrounds a filling of heat-non-conducting material 3. The sides 4 and 5 project upwardly from its base-plate 1 and are connected in any suitable manner by a top 6, to be hereinafter referred to. Two partitions 7 and 8 extend from the base-plate 1 parallel with the sides 4 and 5, respectively, but terminate a short distance from the top and rear ends thereof and are connected at their rear ends by transverse panels 9 and 10. The partitions 11 and 12 form the sides of the fire-pot support 13, and these panels 9 and 10 are connected at their bottom edges by a bottom plate 14, having extensions 15 and 16, which form the inlet-flues 17 and 17ª, open at 18 and 19 and communicating with the flues 20 and 21 at the rear end of the former, as will be referred to hereinafter.

It will be noticed that a panel 22 is secured to the back plate 24 of the stove by flanges 23. This panel forms part of the back of the structure and is also connected to the bottom plate 14. An opening 24ª is provided in said panel 22, which registers with the rear end of the ash-trough, so that the ashes may be forced therethrough into the ash-receptacle 25, immediately beneath the discharge end of said trough. This ash-receptacle is secured in the recess 26, in the rear of the stove, by the extensions of the bail 27, which engage the overhanging portion 28 immediately above the pan, although by raising the transverse bar of the bail the ends thereof may be disengaged from the portion 28 and the ash-pan removed. Said bail will never become overheated, being placed at the exterior of the pan and of the stove itself.

The grate 29 is slidably secured on ways 30 and 31, arranged on the inner sides 32 and 33 of the fire-box, so that it can be slid forward over the breast 34 when it is desired to relieve the said grate from the incumbrance of ashes. For instance, in making a fire, the grate can be slid forward a sufficient distance to permit the ashes being forced into the ash-trough and into the receptacle 25 provided for that purpose. The rear end 35 is cut away at the top, so that the products of combustion can pass from the fire-box direct to the stovepipe, or this cut-away portion may be closed by a damper 36, (see Fig. 11,) comprising a flat blade 37, adapted to normally lie upon the bottom 38 of the transverse flue

40, and provided at each end with one of the segmental deflectors 41 and 42, carrying weighted arms 43 and 43ª, which counterbalance the weight of the blade, so that a pin 44, projecting through a slot 45 in the top of the stove, can be made to close or open the damper, as desired. The top edges of the sides 32 and 33 of the fire-box are slotted their entire length by a series of parallel vertical openings and lead into the top flues 46 and 47, which also communicate with the vertical flues 20 and 21 through the openings 18 and 19 into the inlet-flues 17 and 17ª, or down between the flues 48 and 49 or 50 and 51, as will be presently explained. The partitions 10 and 11 being only long enough to divide the flues 20 and 21 from those just referred to, and designated by the reference-numerals 48, 49, 50, and 51, it is obvious that all of said flues will communicate through the openings 52, 53, 54, and 55, respectively, and the products will find their way into the flue 40 at the juncture of the flues 20 and 21 at points indicated by the numerals 56 and 57, and thence to the stovepipe.

Two plates 58 and 59 connect sides of the fire-pot and the partitions 7 and 8 and 9 and 10, and are slotted, so that the openings 60 and 61 in each plate are immediately over the flues 48 and 50 or 49 and 51, while the openings 62 and 63 are over the flues 46 and 47. A damper mechanism 64 is arranged on each of these plates 58 and 59, and consists of a flat bar or strip 65, Fig. 10, hinged thereto and normally covering the flues 46 or 47. A second strip or bar 66 normally covers the flues 50 or 51 and is adapted to engage and operate the first-named strip through the medium of a link connected to the strip 66, it being understood that only one set of dampers is being described, although, of course, there are two sets, one on each side of the fire-pot. A crank 68 projects from one end of the strip 66 and engages the link through the medium of a hook 68ª, Fig. 10, so that when the strip 66 covers the flue 50 or 51 the strip 65 will normally cover the flue 46 or 47. By turning the crank 68 the strip 66 will be raised in a vertical position, and thus exclude the draft from the flue 60, in which instance the products will be directed down the flues 50 or 51, according to which side the damper is secured. The crank can be turned to the point indicated by O, Fig. 2, which will raise the strip 66 without affecting the first damper; but should the damper 66 be forced over the top of the flue 48 or 49, the first-named strip will be raised, as indicated in dotted lines in Fig. 5, directing the products into the flues 46 and 47 to heat the steam or water pipe, as will be clearly explained in a subsequent paragraph. A partition 88 may be placed so as to exclude the heat from the damper mechanism. The characters "H," "O," "S" (for "Heat," "Oven," "Steam") are placed in plain view in front of stove to indicate which flue is opened.

The flues 46 and 47 are closed in front by a plate 69, carrying the door 70, covering the openings 71, through which communication may be had with the fire-box and the ash-trough. The rear ends of these flues are closed by the water-receptacle 72 in the recess 72ª and to which are secured two series of parallel water or steam pipes 73 and 74, projecting forwardly within the flues 46 and 47, and each series is divided by a deflector-plate 75 and 76, respectively, so as to provide for a circulation of the heated gases which pass into the flues 20 and 21 through the flues 17 and 17ª, and thence to the chimney by way of the transverse flue 40. It will be noticed that one or more of the pipes in each series is connected to a branch steam-pipe 76ª, which can be communicated with through an opening 77, closed by a lid 78 on the top of the stove. The purpose of providing this pipe is to afford means for connecting a steam-cooker to the end thereof, whereby the food in said cooker may be quickly treated by turning one of the controlling-valves 79, it being of course obvious that certain kinds of food are best treated in this manner. These pipes are also to afford means of attaching a steam-hose to reach a washtub, &c., and, if preferred, can be placed immediately over the water-tank and issue through plate 6 at each side of the stovepipe. Hot-water cocks 80 also communicate with each series and are arranged on the outside of the stove and from which hot water may be drawn. These cocks are to be of different sizes, one being very small for greater convenience in drawing water in a small quantity.

The oven 82 is easily removable, as is the water-receptacle just referred to, so as to facilitate the cleaning of the flues, and it comprises a substantially rectangular hollow shell, having the end at the front of the stove adapted to be opened by a hinged door 83 for communication with the interior thereof. The sides 84 and 85 form the lower inner walls of the flues 50 and 51, and the products which pass down these flues will heat the oven.

From the foregoing it will be seen that I have provided a four-draft stove, the operation of the several drafts being as follows: Suppose it is desirable to direct the products from the fire-pot to the chimney. The damper 36 will be opened and the products will pass across the flue 40 to the stovepipe. For baking, the dampers 66 will be raised to a vertical position by turning the crank to the point indicated by the letter "O" on the front of the stove. Any other character, however, may be used. The products will then pass down the flues 50 and 51 and around the sides and underneath the bottom plate of the oven, heating the same in their passage and finding their exit through the flues 20 and 21. In order to accomplish this action, I provide baffle-plates diagonally within the flues 50 and 51 to control the path of the products. To use the device as a heating-stove, the flues

50 and 51 will be closed and the products will be directed down the flues 48 and 49, and thence into the flues 20 and 21, whereby the sides of the stove will be heated and the temperature of the surrounding atmosphere raised. To heat the water or generate the same into steam, the second strip will cover the flues 48 and 49, which will raise the first-named strips of the damper mechanism to a position indicated by dotted lines in Fig. 5, and the heated gases will be directed down over the steam-pipes and after passing around the same will enter the flues 20 and 21 through the inlet-flues 17 and 17ª and finally pass out into the chimney by way of the flue 40. In brief, to be used as a heater damper 36 will be closed and damper-cranks 89 will be set to point to "H." To heat the oven, said crank shall be turned perpendicularly, pointing to "O," and to heat water the crank shall be turned to "S."

Of course deflecting plates or strips may be used in any of the flues for making a tortuous passage-way for the gases and products; but these have been neither shown nor described owing to the fact that their construction and operation are well known to any one skilled in the art to which this invention appertains.

During warm weather when it is desirable to ventilate the room the doors 86 and 87 can be opened and the draft within the flues 48 and 49 will draw the heated air within the stove, and thus purify the surrounding air as well as cool the outside casing of the stove. A similar arrangement (not represented in the drawings) will cool the oven by admitting cold air through flues 50 and 51, cooling it externally without admitting cold air within the oven itself.

From the foregoing it will also be seen that I have provided for a convenient and cleanly means for removing the ashes, viz: If the ashes should accumulate on the top of the grate, they are to be removed, as above explained. The ashes accumulating in the ash-trough are to be shoved into the ash-pan by means of two or three thrusts of the scraper provided therefor. The ash-pan itself is to be removed by simply taking it by the bail and carrying it away. The ashes gradually accumulating in the various flues can be removed in the usual way by first removing the oven or the water-tank, as above stated.

I claim—

1. The combination with a stove provided with a central fire-pot and an oven, of a separate series of flues on each side of the fire-pot and oven, and a single damper mechanism for opening and closing each series of said flues, substantially as described.

2. The combination with a stove-casing having a central fire-pot and a direct-draft flue leading therefrom, of a damper arranged in said flue provided with weighted depending arms, and projections extending through the top of the stove for operating said damper.

3. The combination with a stove-casing and its fire-pot of two independent flues on each side of said fire-pot, an auxiliary flue into which said flues empty, and a transverse flue at the top of the second-named flue communicating with the stovepipe-opening.

4. The combination with a stove-casing and a central fire-pot arranged therein, three parallel flues on each side of said fire-pot, and means for normally keeping two flues in each series closed while the remaining flues are open, substantially as described.

5. In a stove the combination with a casing and a fire-pot, of a steam heating-flue on each side of said fire-pot, secondary flues arranged vertically in said casing and communicating with the steam heating-flues, and a single damper mechanism for directing the products to and away from each of the said steam heating-flues.

6. The combination with a stove-casing and a fire-pot, of a removable ash-pan secured to said casing by means of a bail having projecting ends which normally engage said casing, an ash-trough immediately below the fire-pot and emptying directly into the pan or receptacle at the rear end of said trough.

7. The combination with a stove-casing and a central fire-pot, a steam heating-flue on each side of said fire-pot, of a removable water-receptacle secured in a recess in said casing, two series of pipes projecting from said receptacle and into said flues and means for directing the products of combustion to or away from said pipes, substantially as described.

8. The combination in a stove, of a central fire-pot, an oven directly below said fire-pot and a plurality of vertical flues on each side of the fire-pot and oven.

9. In a stove, the combination with a central fire-pot, of a flue leading directly to the pipe-opening from the fire-pot, a damper therefor, a plurality of flues on each side of the fire-pot, and a removable oven below said fire-pot, the sides of said oven forming part of the sides of flues nearest the sides of the fire-pot.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP MANNES ST. LOUIS.

Witnesses:

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B. A. HALL.