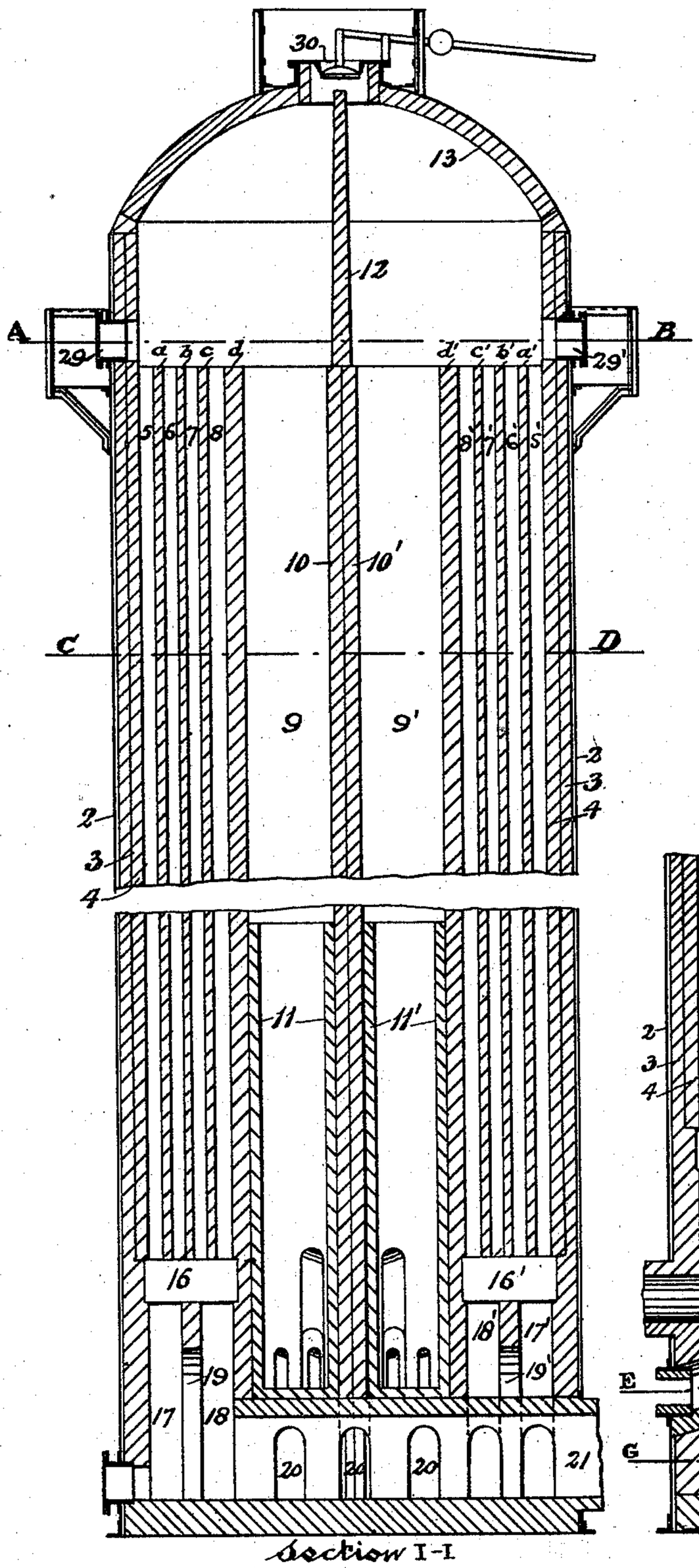
(No Model.) 2 Sheets—Sheet 1.

G. W. McCLURE.

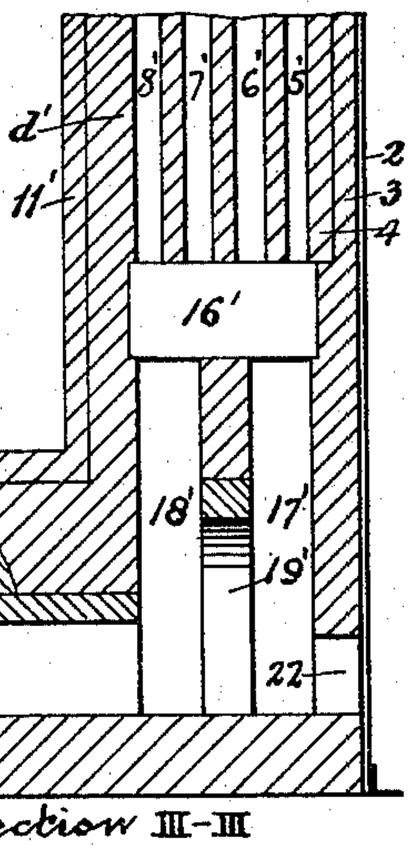
HOT BLAST STOVE.

No. 573,901. Patented Dec. 29, 1896.



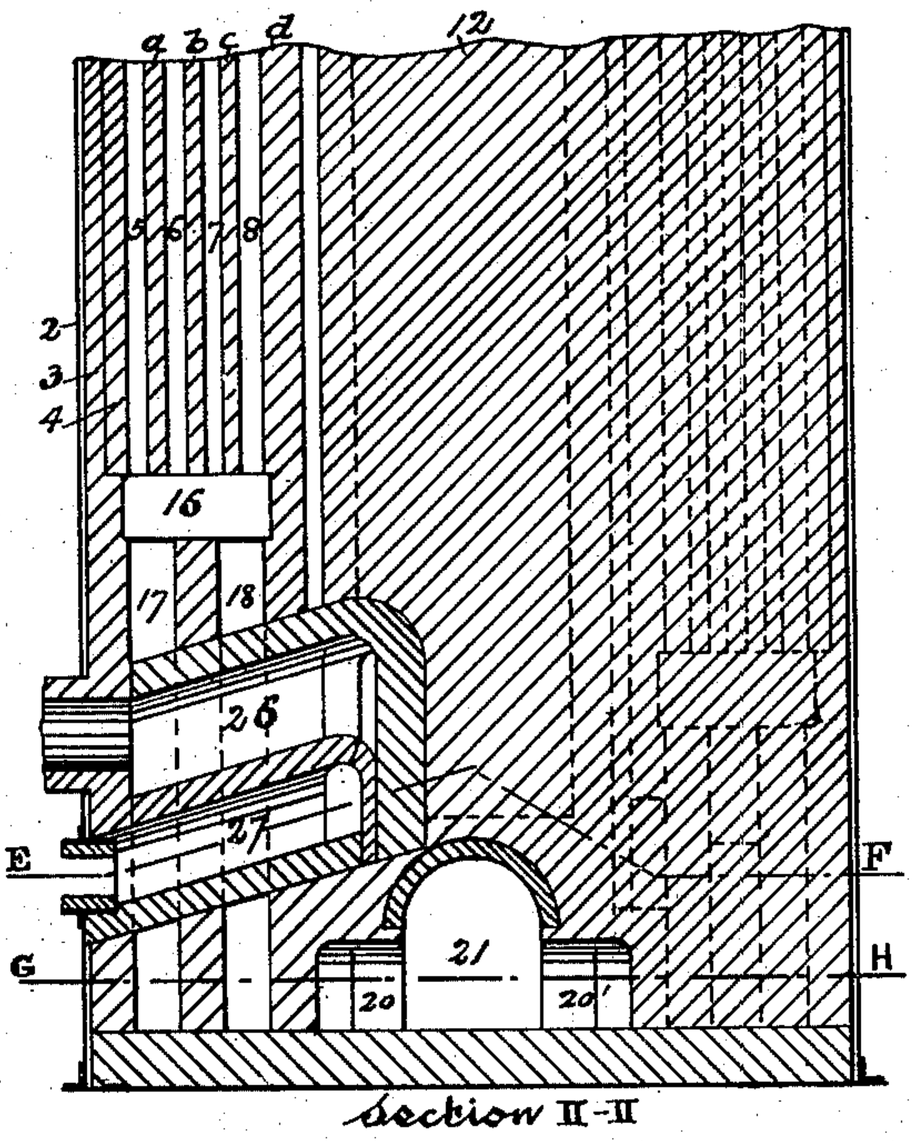
Section I-I

Fig. 1



Section III-III

Fig. 3



Section II-II

Fig. 2

Witnesses
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M. W. Baskey.

Inventor
George W. McClure,
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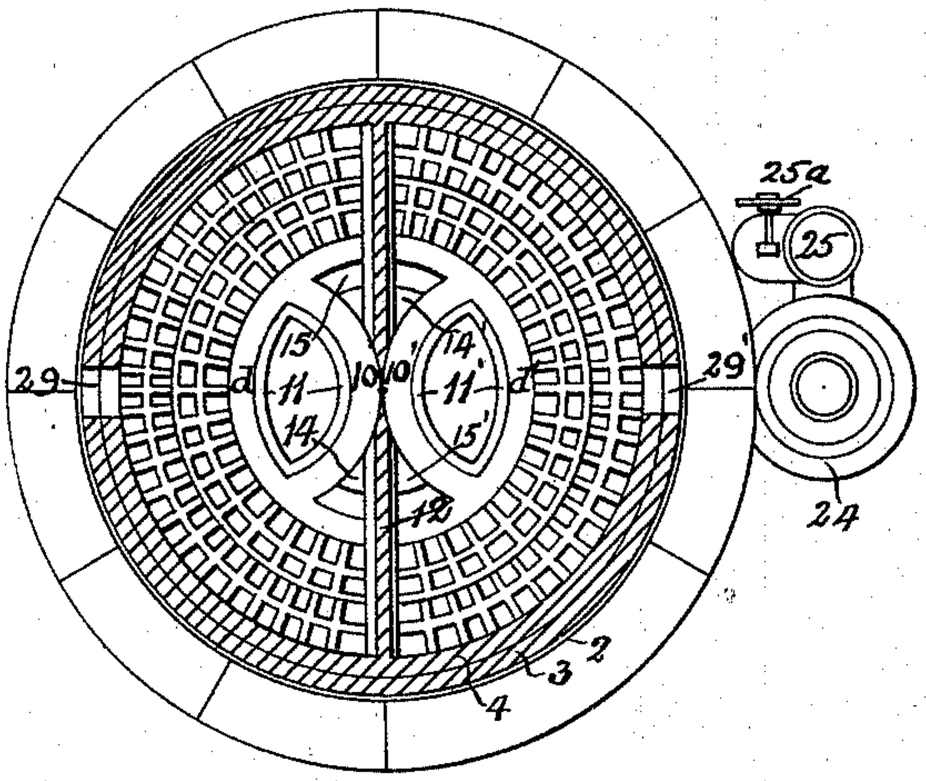
his Attorney

(No Model.) 2 Sheets—Sheet 2.

G. W. McCLURE.

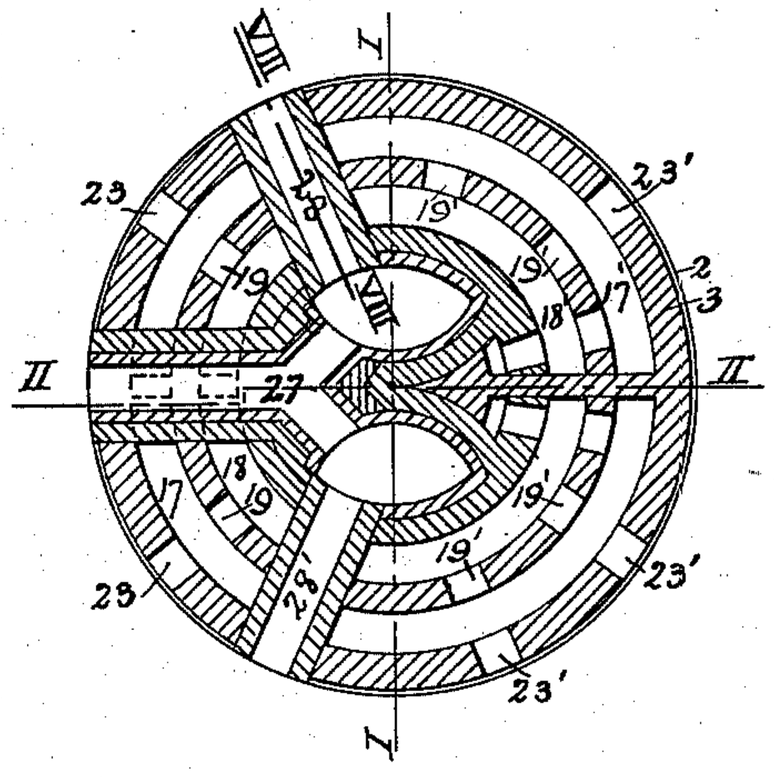
HOT BLAST STOVE.

No. 573,901. Patented Dec. 29, 1896.



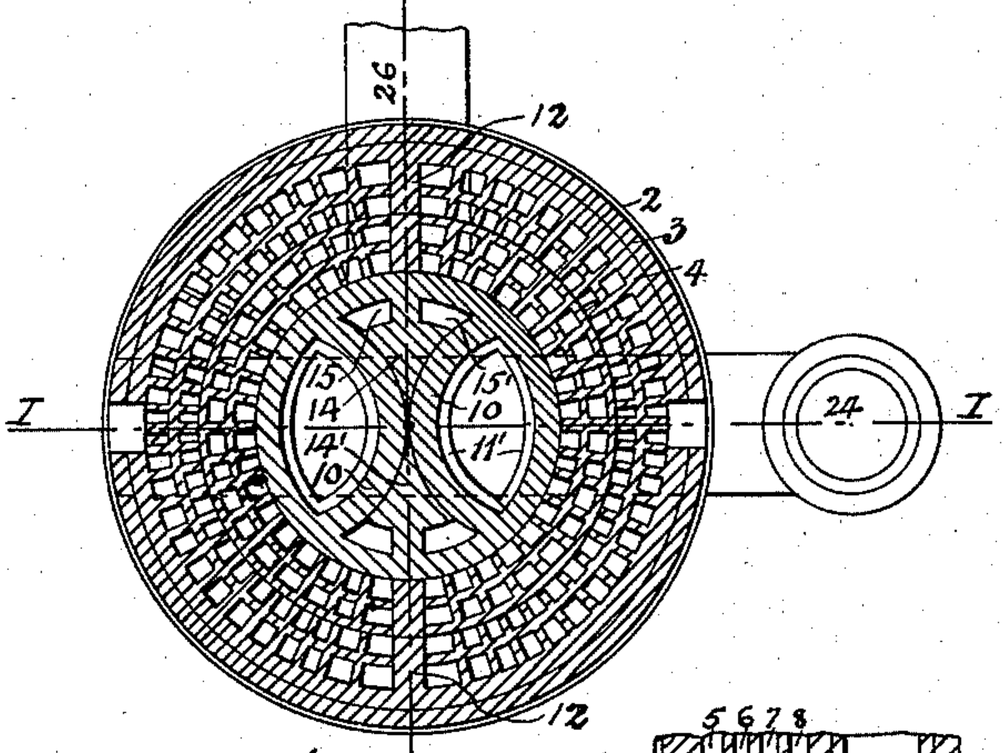
Section A-B

Fig. 4



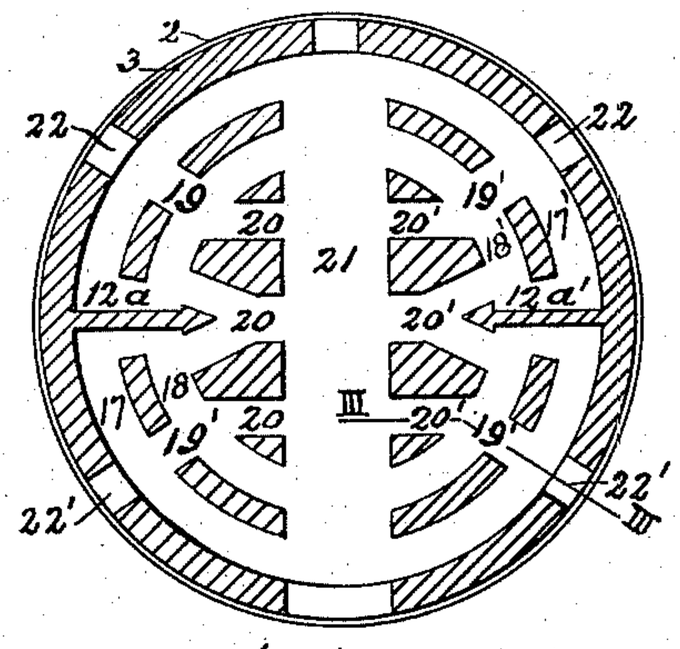
Section E-F

Fig. 6



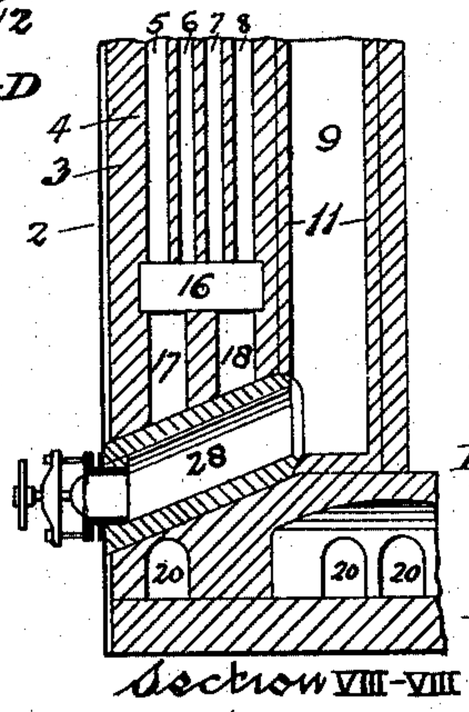
Section C-D

Fig. 5



Section G-H

Fig. 7



Section VIII-VIII

Fig. 8

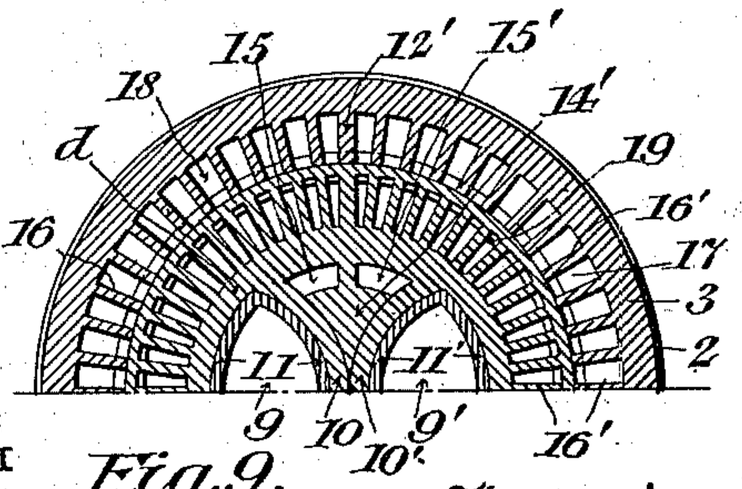


Fig. 9.

Witnesses
Edward A Lawrence
M. H. Caskey.

Inventor
George W. McClure,
by Wm L. Pierce,
his Attorney

UNITED STATES PATENT OFFICE.

GEORGE W. McCLURE, OF PITTSBURG, PENNSYLVANIA.

HOT-BLAST STOVE.

SPECIFICATION forming part of Letters Patent No. 573,901, dated December 29, 1896.

Original application filed October 17, 1895, Serial No. 565,933. Divided and this application filed January 3, 1896. Serial No. 574,199. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. McCLURE, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Hot-Blast Stoves, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a section on line I I of Fig. 5. Fig. 2 is a section on line II II of Fig. 6. Fig. 3 is a section on line III III of Fig. 7. Fig. 4 is a section on line A B of Fig. 1 Fig. 5 is a section on line C D of Fig. 1. Fig. 6 is a section on line E F of Fig. 2. Fig. 7 is a section on line G H of Fig. 2. Fig. 8 is a section on line VIII VIII of Fig. 6; and Fig. 9 is a horizontal section of Fig. 1, through the flue 16.

My invention relates to improvements in two-pass hot-blast stoves, and some of the purposes thereof are the following: to construct said stoves with two central combustion-chambers separated by a central wall which extends clear across the stove to the level of the stack-flue, but below that point simply extends across the two outer annular flues, but is omitted in the center, and, secondly, to construct a stove wherein the inner vertical flue between the base of the stove and the horizontal flue at about the level of the hot-blast inlet is extended to the bottom of the stove. In both these particulars this stove is a modification of the stove described in application filed by me October 17, 1895, Serial No. 565,933, of which this is a division. I do not therefore claim in this case, broadly, the feature of two central independent combustion-chambers, nor the method of introducing air and gas into the combustion-chamber, nor building the walls of the combustion-chamber, flues, and linings independent of each other, nor building the walls of the combustion-chambers and heating-flues on arcs whereby they are wedged in position, as these peculiarities constitute, *inter alia*, the claims of the aforesaid application.

In the accompanying drawings, which make part of this specification, 2 is the metal jacket of the stove, 3 the shell, and 4 the lining.

a b c d and *a' b' c' d'* are four semicircular vertical walls extending from near the top of the stove to near the bottom of the same, and 5, 6, 7, and 8 and 5' 6' 7' 8' are semicircular flues formed between the same and the lining 4 of the stove. The walls *d d'* extend farther down than the others, stopping only at the stack-flue and form the outer walls for the combustion-chambers 9 9'. Sprung from the inside of said walls *d d'* are the arc-shaped walls 10 10', which form inner walls for the combustion-chambers, which have the reinforcing-walls 11 11'.

12 is a central dividing-wall which reaches from the dome 13 to the base of the stove. Down to the top level of the stack-flue it extends clear across the stove, cutting the same into practically two independent stoves. Below said level its central part is omitted, and it merely separates the two sets of the two outer semicircular vertical flues, as seen clearly in Fig. 7, where said wall is marked 12^a $12^{a'}$. From the top level of the stack-flue up to the top level of the combustion-chambers this central wall 12 is expanded into the wedge-shaped walls 14 14', where it meets the arc-shaped walls 10 10', its center really being formed by the abutting of the walls 10 10' against each other.

15 15 and 15' 15' are four odd flues adjacent to walls 14 14'.

Flues 5 to 8, 5' to 8', and 15 15' drop into horizontal flues 16 16', respectively, formed by girders set on edge and which support the heating-flue structure proper. These flues 16 16' are stepped to pass over the hot-blast inlet. Below flues 16 16' are two vertical semicircular flues 17 18 17' 18', communicating by openings 19 19', and both extending to the base of the stove. Flues 17 17' communicate by radial flues 20 20' with the stack-flue 21, as seen in Fig. 7. Opposite said radial flues are cleaning-doors 22 22', and opposite the openings 19 19' are cleaning-doors 23 23.

24 is the stack, having cold-blast inlet 25, controlled by valve 25^a.

26 is the hot-blast outlet, controlled by a suitable valve, and 27 is the gas-inlet, and 28 28' the air-inlet.

29 29 are cleaning-doors at the top of the stove, and in the dome of the stove is valve 30.

In operation when the stove is on gas the hot-blast and the cold-blast valves are closed and the gas, air, and stack valves opened.

Gas is supplied to both combustion-chambers by the common gas-inlet 27 and by the double air-inlets 28 28′. The gas and air burning in the combustion-chambers 9 9′ ascend said chambers and are then evenly and uniformly distributed to their respective sets of independent heating-flues 5 to 8, 5′ 8′, and 15 15′ Thence they pass to the horizontal flues 16 16′, out to vertical flues 17 17′ 18 18′, and by radial flues 19 19′ and 20 20′, to the stack-flue 21, and to the stack 24. By this arrangement two independent stoves are secured and irregularity of draft is practically impossible.

When the stove is sufficiently heated, the stack, air, and gas valves are closed, the cold blast turned on and the hot-blast valve opened, the air then making a retraverse directly opposite to the direction just described.

The combustion-chambers, if desired, may be circular instead of oval in cross-section.

Having described my invention, I claim—

1. In hot-blast stoves, the combination of a shell; a stack-flue in the base of said stove; a vertical cross-wall dividing the stove into two independent parts above the level of the stack-flue and extending down to said stack-flue; an independent combustion-chamber for each division located at the center of the stove against the dividing cross-wall; semicircular vertical flues surrounding said combustion-chamber except at its base; an extension of the semicircular flues to the base of the stove; cross-walls separating said semicircular flues in the base of the stove and communication between said last-mentioned flues and the stack-flue.

2. In hot-blast stoves, the combination of a shell, a dividing vertical wall within said shell; an independent combustion-chamber for each division, located at the center of the stove against the dividing cross-wall and semicircular vertical flues surrounding said combustion-chamber except at its back, semicircular horizontal flues communicating with the bottom of said semicircular vertical flues; vertical flues beneath and communicating with said semicircular horizontal flues; a stack-flue and radial flues connecting said stack-flue with said last-mentioned vertical flues.

3. In hot-blast stoves, the combination of a shell; a vertical dividing-wall in said shell extending clear across the shell from the dome to the stack but at the level of the stack-flue said wall being interrupted at its center; an independent combustion-chamber for each division, located at the center of the stove against the dividing cross-wall; semicircular vertical flues surrounding said combustion-chamber except at its back; semicircular horizontal flues communicating with said semicircular vertical flues; vertical flues beneath and communicating with said semicircular horizontal flue; a stack-flue and radial flues connecting said stack-flue with said last-mentioned vertical flues.

In testimony whereof I have hereunto set my hand this 30th day of December, A.D. 1895.

GEORGE W. McCLURE.

Witnesses:
WM. L. PIERCE,
LUCY D. IAMS.