

(No Model.)

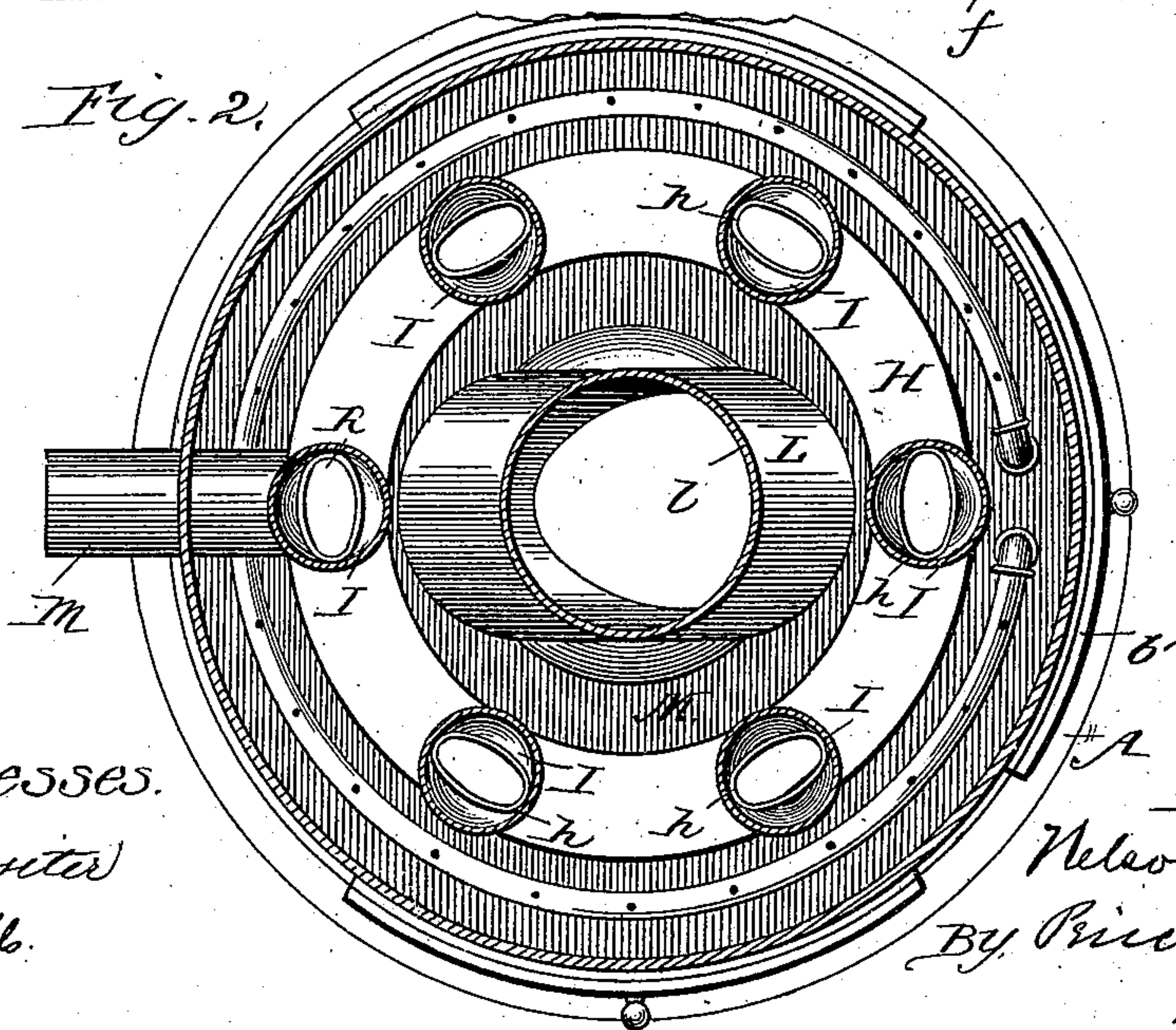
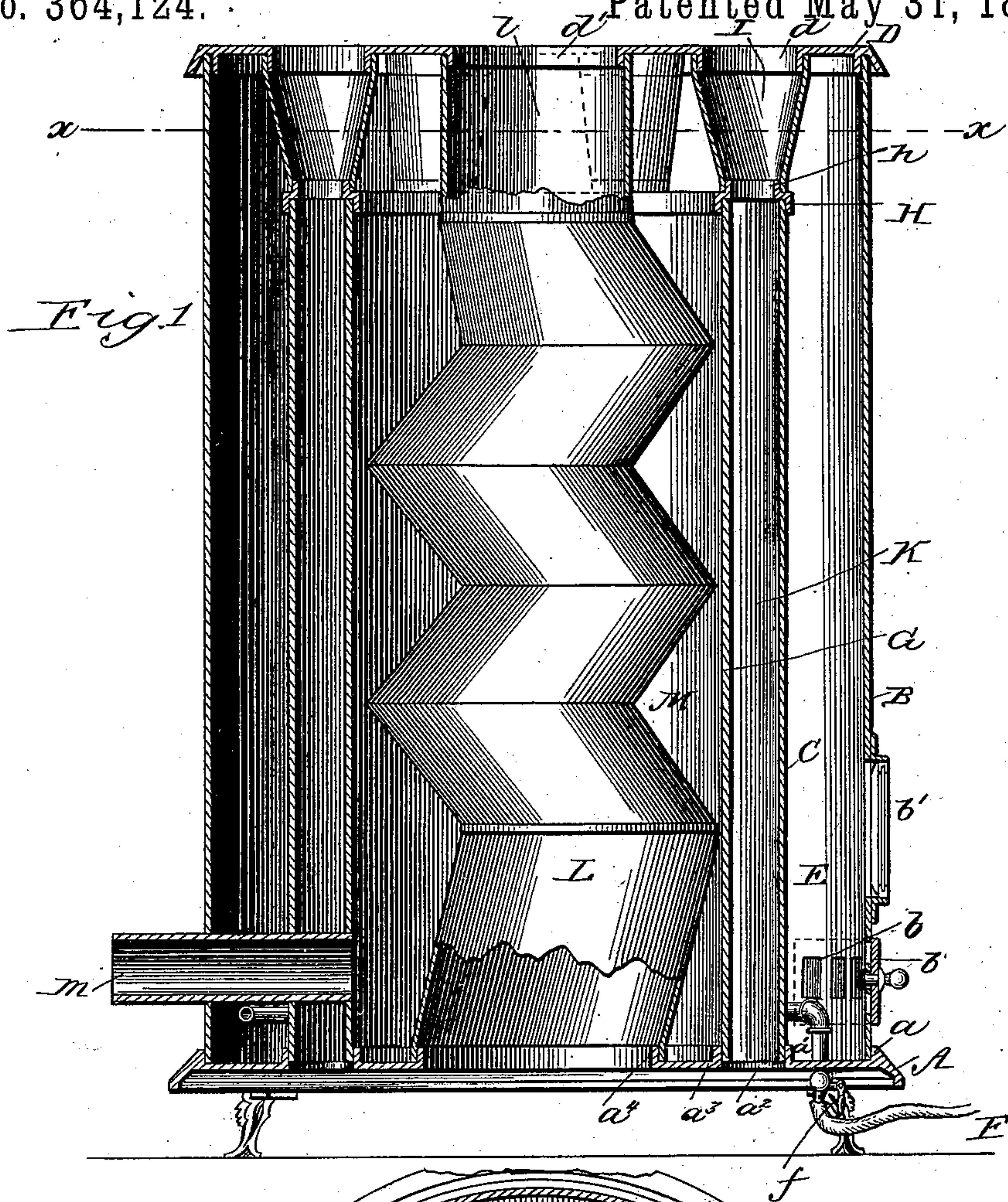
2 Sheets—Sheet 1.

N. A. McCLARY.

GAS OR OIL HEATING STOVE.

No. 364,124.

Patented May 31, 1887.



Witnesses.

W. Rosier
J. H. Mills.

Inventor
Nelson A. McBlary
By Price T. Fisher
His Attys.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

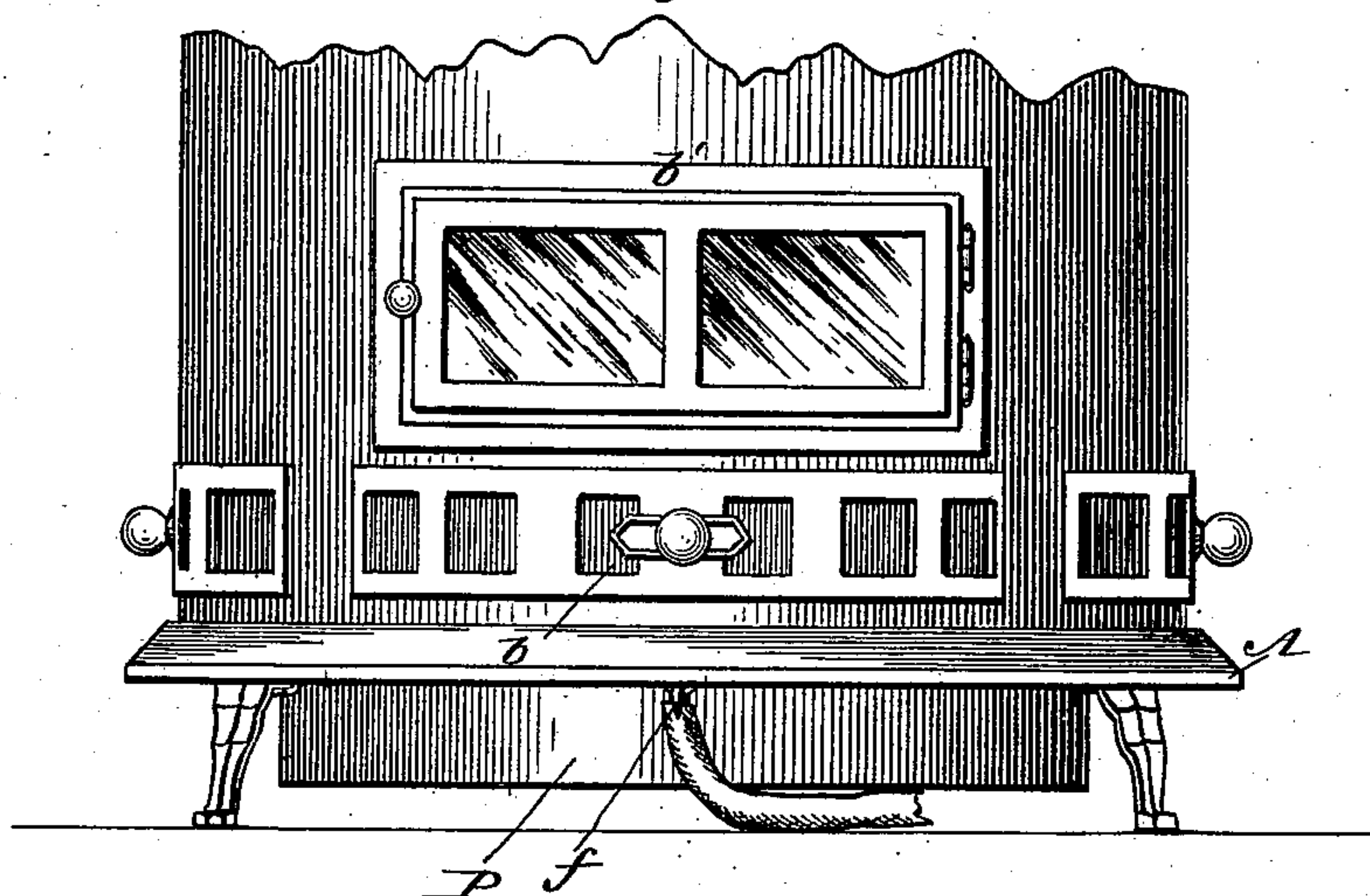
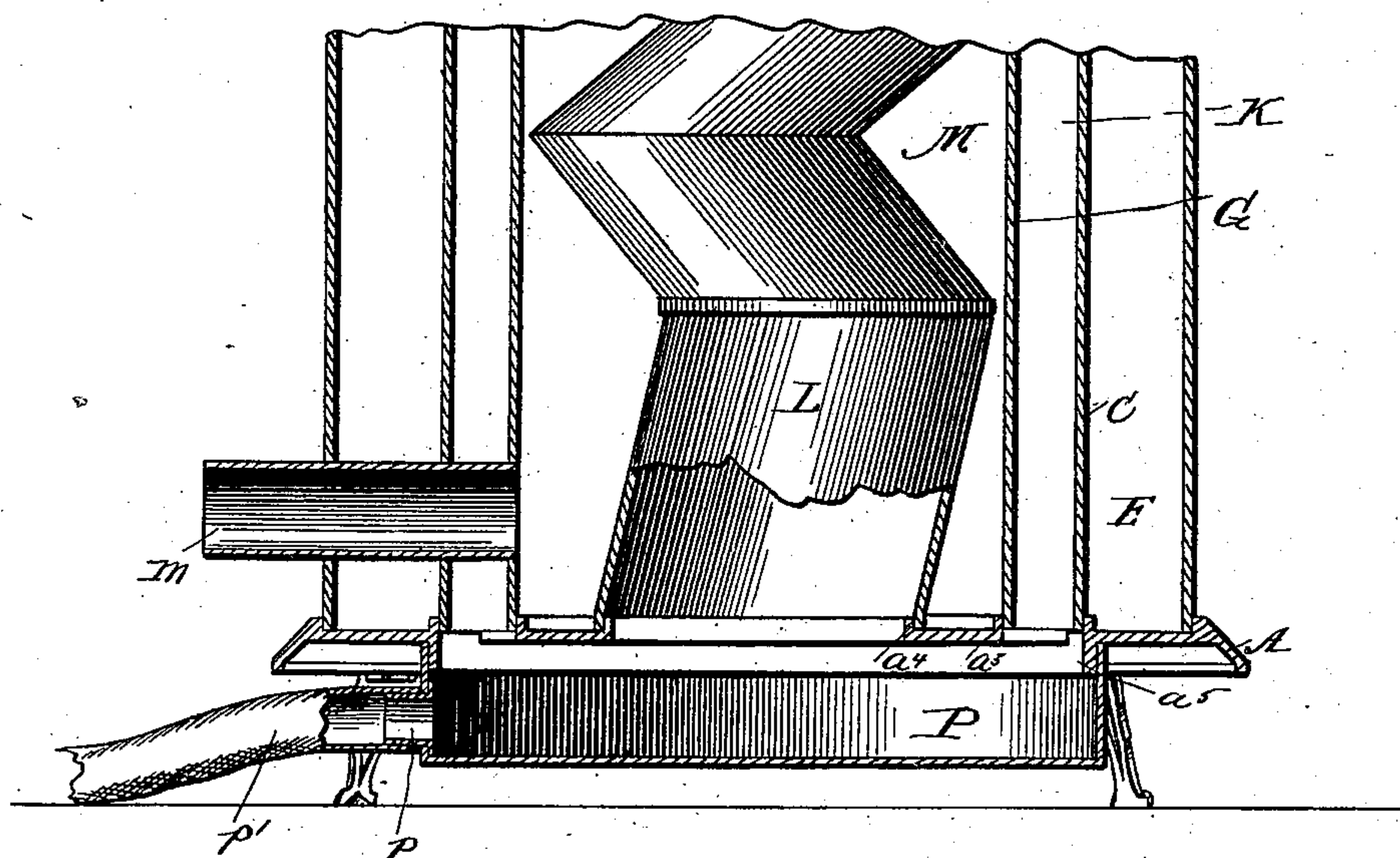


Fig. 4.



Witnesses:
W. Rossiter
J. E. Wood.

Inventor:
Nelson A. McClary
By *Prince T. Fisher*
Attys

UNITED STATES PATENT OFFICE.

NELSON A. McCLARY, OF SOUTH EVANSTON, ASSIGNOR TO THE CHICAGO GAS STOVE COMPANY, OF CHICAGO, ILLINOIS.

GAS OR OIL HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 364,124, dated May 31, 1887.

Application filed December 28, 1885. Serial No. 186,872. (No model.)

To all whom it may concern:

Be it known that I, NELSON A. McCLARY, a citizen of the United States, residing at South Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas and Oil Heating-Stoves, of which I do declare the following to be a full, clear, and exact description; reference being had to the accompanying drawings, forming part of this specification.

My present invention has relation to the improvement of that class of gas or oil stoves in which the combustion of the gas or oil is effected within a closed chamber from which the products of combustion are led away by a suitable eduction-pipe, and which, by radiation, serve to impart heat to the air that surrounds it and that is passed through it by means of suitable flues. In the construction of this kind of stove it has been heretofore proposed to divide the combustion-chamber into two concentric compartments connected at their tops, so that the products of combustion would pass up the outer one and down the inner one, and to extend through the center of the inner chamber an air-flue within which were placed a series of deflecting-plates, which caused the air, as it ascended, to take a sinuous course, in order to more thoroughly absorb the heat from the surface of the combustion-chamber.

The primary object of my present invention is to so improve the construction and arrangement of the combustion-chamber and of the air-heating flues that the products of combustion, before passing into the eduction-pipe, will be robbed of all available heat.

A further object of my invention is to improve the construction of the stove in sundry details, hereinafter described; and these objects I have accomplished by the novel construction and arrangement of parts set forth in the subjoined description, illustrated in the drawings, and particularly defined in the claims at the end of this specification.

Figure 1 is a view of my improved stove in central vertical section, parts being shown in elevation. Fig. 2 is a view in transverse section on line $x-x$ of Fig. 1. Fig. 3 is a fractional view in side elevation of a stove having a fresh-air hood applied thereto. Fig. 4 is a view in vertical section of such stove.

A designates the base-plate of the stove, supported upon suitable feet and provided, preferably, with the flange a , within which fits the lower edge of the outer cylinder or drum, B, which, together with the cylinder C, the base-plate A, and the top or cover D, constitutes the main combustion-chamber E of the stove. In the bottom of the combustion-chamber is placed the circular perforated gas or oil pipe F, the ends of which project through the base-plate and are provided with a suitable stop-cock, f , for controlling the supply of fuel. Concentric with the cylinder C, which closely adjoins the flange a' of the base-plate A and rests upon the reticulated arms a^2 formed therewith, is placed the cylinder G, the lower edge of which also rests upon the arms a^2 of the base-plate and is joined to the flange a^3 of such plate. Upon the tops of the cylinders C and G is fixed the cap H, in which are cast suitable flanged openings, h , from which lead the flaring discharge-pipes I, that connect with the flanged openings d in the cover D of the stove. The cylinders C and G and their cap H constitute the air-heating chamber K, into the open bottom of which cool air enters, and from the top openings of which it passes in heated condition.

Within the cylinder G, and encompassing the flanged opening a^4 of the base-plate A, is placed the zigzag or sinuous air-heating flue L, the top portion, l , of which is of smaller diameter than the lower part of the flue and encompasses the flanged opening d' of the cover D. The chamber M, which is formed by the cylinder G, the flue L, the cover D, and the bottom plate of the stove, communicates at its top with the main combustion-chamber E, and from the base of this chamber M leads the eduction-pipe m , through which the products of combustion will be discharged.

Near the bottom of the outer cylinder, B, a number of openings, b , will be formed for the admission of air to support combustion, and the amount of air admitted through these openings will be controlled by means of the register-valves b' , that cover the same. In the cylinder B, about the position shown, will be formed an opening, through which the fire may be lighted, this opening being closed preferably by means of an isinglass door, which permits the inspection of the flame.

From the foregoing construction the operation will be seen to be as follows: The fuel, consisting of mixed gas and air, will be admitted to the pipe F in proper quantity, determined by the stop-cock *f*, and the valves *b* will be opened such distance as to admit a proportionate quantity of air sufficient to support a proper combustion of the fuel. By means of these register-valves *b*, I am enabled to admit the exact quantity of air necessary to support perfect combustion, whatever may be the amount of mixed gas and air or oil that is being burned at the pipe F. The fire being now started at the base of the chamber E, the products of combustion will pass upward through chamber E and downward through the chamber M until they escape through the eduction-pipe *m*. At the same time air will pass upward through the intermediate air-chamber, K, and will escape thence through the pipes I at its top, and air will also pass in sinuous course upward through the zigzag flue L. By contracting the upper portion of the air-flue L, and by making the discharge-openings of the chamber K of less area than the induction end of said chamber, I am enabled to so impede the flow of the air that it will become thoroughly heated before leaving the stove. This is a decided advantage, for were the air chamber or flue L of like diameter throughout, the air would ascend with too great rapidity to insure its becoming thoroughly heated. By forming the pipes I flaring at their tops and somewhat flattened at their bottoms, I am enabled also to obtain a larger surface exposure to the heated products of combustion than would be possible were the pipes of small and uniform diameter. By placing the air-chamber K between them in combustion-chamber E and the chamber M, a very large heated surface is exposed to the air, and by forming the central air-flue, L, of sinuous or zigzag shape the products of combustion and highly-heated air in the chamber M will be forced to impart their heat to the large surface area of the flue L, which will in turn communicate it to the air passing upward through the flue. By this means the entire available heat of the fuel will be absorbed by the air before the products of combustion pass from the stove.

In Figs. 3 and 4 of the drawings I have shown the base-plate A of the stove as provided with a dependent flange, *a*, on which is removably fitted the hood P, that is furnished with a suitable induction-pipe, *p*, from which leads the tube or flue *p'* to the outer air. This hood can be readily attached to or removed from the stove, and when in position will insure the delivery to the air-flues K and M of the stove a continuous supply of pure air.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a gas or oil stove, the combination of a bottom plate, a cover, an outer cylinder or

casing, B, and an inner cylinder or casing, C, forming the main primary combustion-chamber E, the gas or oil pipe F, located within and around the bottom of said combustion-chamber, the cylinder or casing G, separated from the cylinder or casing C to form an air-heating chamber, K, open at its top and bottom, an open-ended air-heating flue within said casing G and separated therefrom to form an inner combustion-chamber, M, closed at its bottom, flues or passages for the products of combustion, uniting the chambers E and M at their tops, and a suitable exit-flue leading from the bottom of the inner combustion-chamber, M, substantially as described.

2. In a gas or oil stove, the combination of a cylinder or casing, B, and a cylinder or casing, C, forming the main combustion-chamber E, the gas or oil pipe F, located within and around the bottom of said combustion-chamber, the cylinder or casing G, separated from the cylinder or casing C to form the air-heating chamber K, open at its top and bottom, the perforated top plate, H, above said air-heating chamber, the perforated cover D, short pipes between said plate H and cover D, an open-ended air-heating flue within said cylinder or casing G and separated therefrom to form an inner combustion-chamber, M, closed at its bottom, flues or passages between the top plate, H, and cover D for uniting the main combustion-chamber E, an inner combustion-chamber, M, and an exit-flue leading from said combustion-chamber M, substantially as described.

3. In a gas or oil heating-stove, the combination of a bottom plate, a cover, an outer cylinder or casing, B, and a cylinder or casing, C, forming the main combustion-chamber E, a gas or oil pipe, F, located within and around the bottom of the said combustion-chamber, a cylinder or casing, G, separated from the cylinder or casing C to form the air-heating chamber K, open at top and bottom, a zigzag open-ended air-heating flue within said cylinder or casing G and separated therefrom to form an inner combustion-chamber, M, closed at its bottom, flues or passages for the products of combustion, uniting the chambers E and M at their tops, and an exit-flue leading from the lower part of the inner combustion-chamber, M, substantially as described.

4. In a gas or oil stove, the combination of walls or casings forming an outer combustion-chamber, E, walls or casings forming the chamber M, flueways or passages connecting said chambers, the casings of said chambers E and M being separated from each other to form an intermediate air-heating chamber, K, an air pipe or flue, L, located within the chamber M, and a fresh-air hood communicating with the chamber K and with the pipe or flue L, substantially as described.

NELSON A. McCLARY.

Witnesses:

GEO. P. FISHER, Jr.,
IDA B. CARPENTER.