

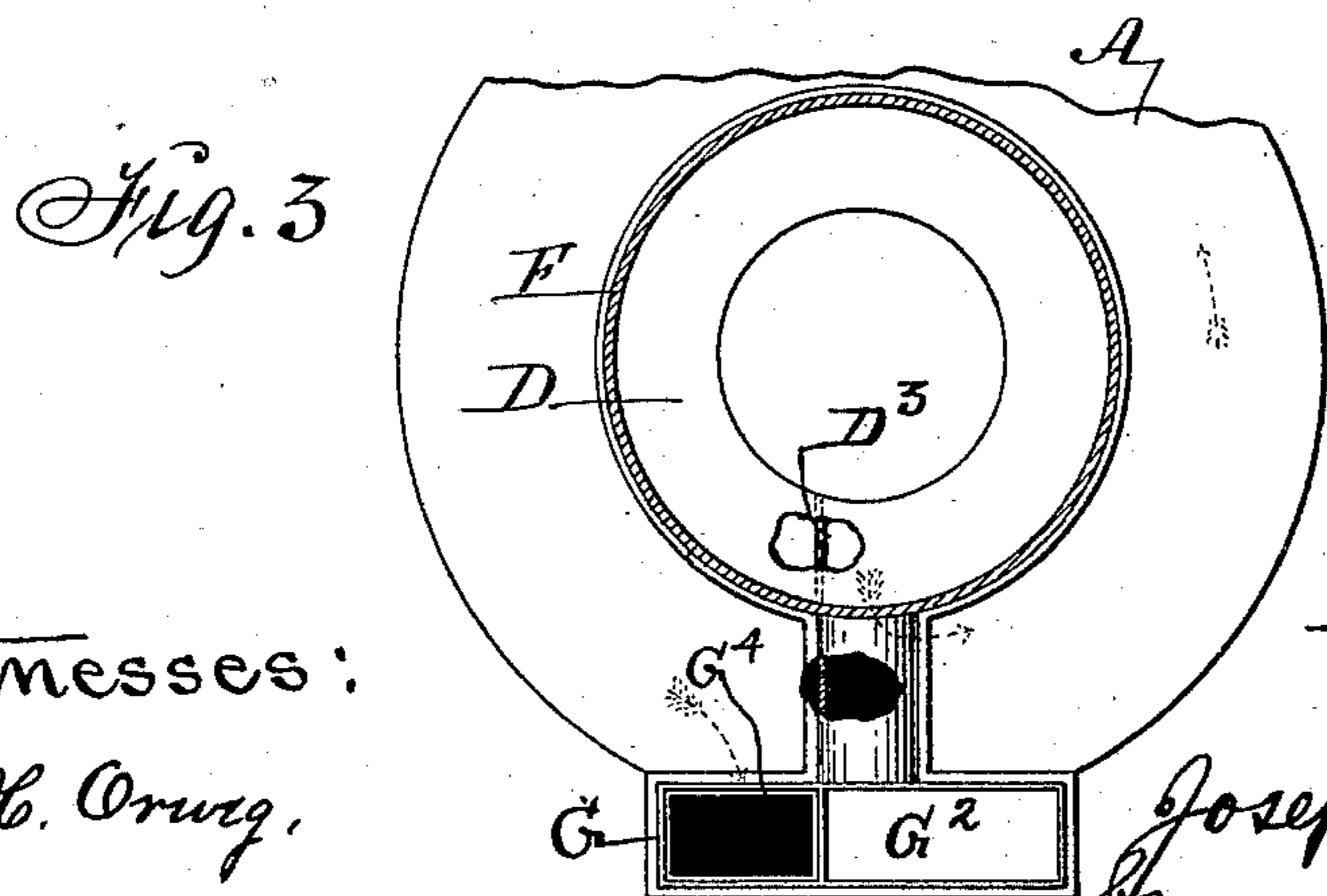
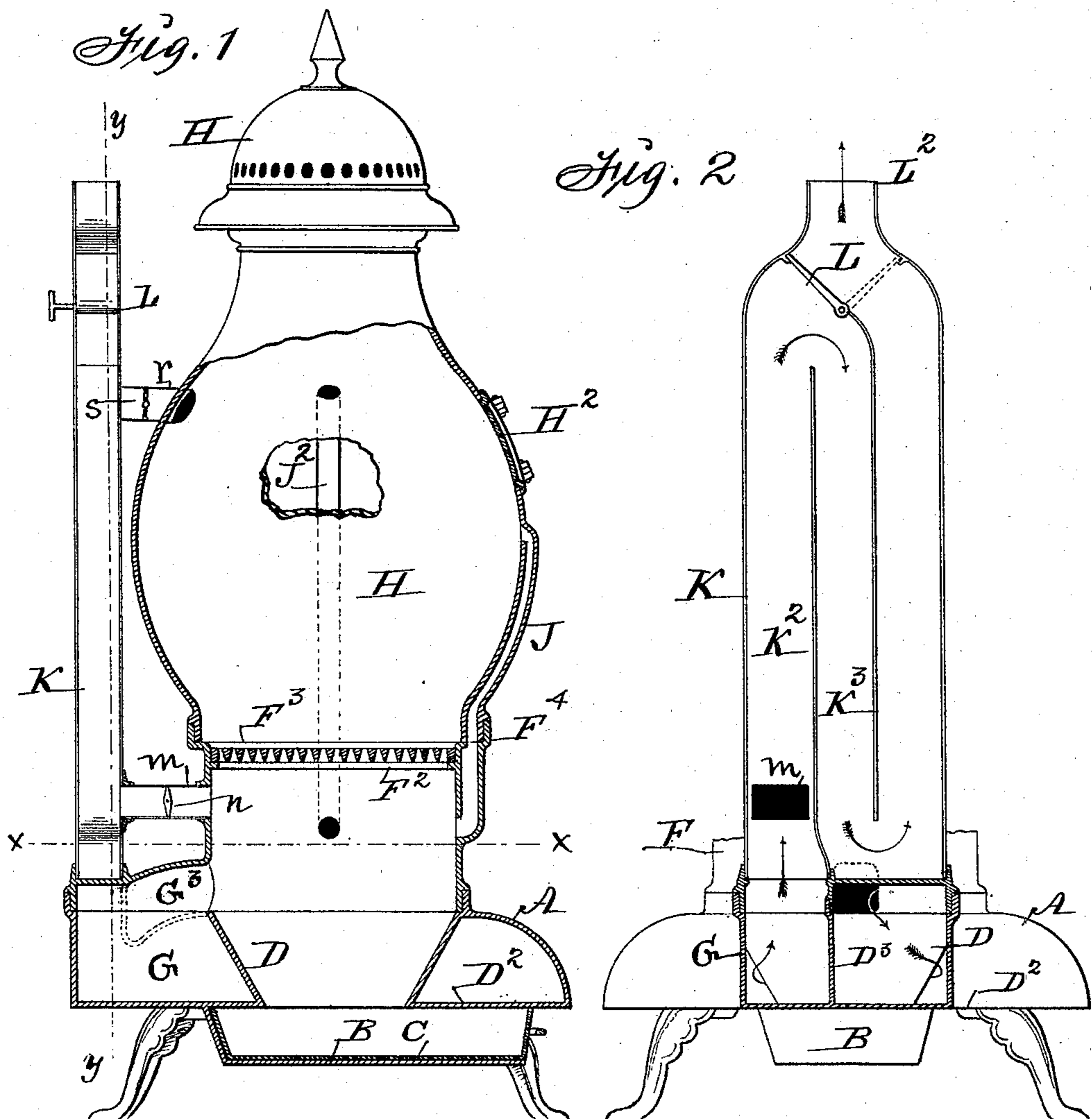
(No Model.)

J. T. ROBBINS.

METHOD OF AND MEANS FOR BURNING COAL, &c., IN STOVES AND FURNACES.

No. 366,255.

Patented July 12, 1887.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JOSEPH T. ROBBINS, OF NEWTON, IOWA.

METHOD OF AND MEANS FOR BURNING COAL, &c., IN STOVES AND FURNACES.

SPECIFICATION forming part of Letters Patent No. 366,255, dated July 12, 1887.

Application filed December 19, 1885. Serial No. 186,147. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH T. ROBBINS, a citizen of the United States of America, and a resident of Newton, in the county of Jasper and State of Iowa, have invented a new and useful Method of and Means for Burning Coal, &c., in Stoves and Furnaces, of which the following is a specification.

My invention consists in the construction and operation of a stove or furnace, as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a stove (adapted to practice my method) having parts broken away. Fig. 2 is a vertical section through the line *yy* of Fig. 1, viewed from behind the stove. Fig. 3 is a downward view through the line *xx* of Fig. 1.

A represents the tubular base, and B a depressed recess in said base adapted to receive an ash pan or drawer, C.

D is an annular deflector that extends from the circular opening in the top of the base to its bottom D<sup>2</sup>.

D<sup>3</sup> is a vertical partition that extends through the base from the deflector and inner wall, D, to the outer wall and rear center of the base.

F is a cylinder fitted in the opening in the top of the base A to produce a combustion-chamber. It has an annular flange, F<sup>2</sup>, near its top to support a grate, F<sup>3</sup>, and an annular shoulder, F<sup>4</sup>, at its top to support a vertical extension.

G is the base of a smoke-flue, formed on or fixed to the rear side of the base A and cylinder F. One side of this base has an air-tight cover, G<sup>2</sup>, and a horizontal extension, G<sup>3</sup>, that produces a passage-way to allow the products of combustion to pass from the combustion-chamber F into the annular chamber in the base on one side of the vertical partition D<sup>3</sup> to be directed around the deflector D to escape through the opening G<sup>4</sup> in the base G of the flue, as indicated by arrows in Fig. 2.

H is a body or casing that produces a fuel-chamber and cold-air chamber fitted to the top of the cylinder and combustion-chamber F. H<sup>2</sup> represents a door in front of the said body or casing H, through which fuel is introduced.

H<sup>3</sup> is a perforated top, through which cold air is admitted.

The casing H and cylinder F joined together produce a shouldered case or body having openings at its top to admit air and an opening to admit fuel, and the grate resting upon the annular shoulder divides the complete case or body, as required, to produce a fuel-chamber above the grate and a combustion-chamber under the grate.

J is an open-ended air-conductor and superheater that extends from an opening in the body or casing H immediately under the door H<sup>2</sup> to an opening in the cylinder at a point below the grate.

Corresponding conduits and superheaters, J<sup>2</sup>, are combined with the opposite sides of the stove, as indicated by dotted lines in Fig. 1, to convey and superheat air and gases from the top of the fuel-chamber and from above the fuel in the chamber, and to discharge the same into the combustion chamber under the grate.

K is a radiator and smoke-flue combined, fitted and fixed to the top of the base G, having an opening, G<sup>4</sup>, at one side of its top.

K<sup>2</sup> is a vertical partition that extends from the partition D<sup>3</sup> in the base A to the converging top of the radiator.

K<sup>3</sup> is a corresponding and parallel partition that extends from the lower portion of the radiator to the converging top, as clearly shown in Fig. 2.

L is a damper pivoted at the top of the partition K<sup>3</sup> in such a manner that it can be turned from one side of the base of the smoke-flue L<sup>2</sup> at the top of the radiator to the other.

*m* is a tube connecting the upper portion of the cylinder F with that part of the radiator that extends from the partition K<sup>2</sup> to the wall of the radiator, as clearly shown in Fig. 2.

*n* is a damper pivoted in the tube *m*.

*r* is a tube connecting the top portion of the fuel-chamber H with the radiator and flue K.

In the practice of my method in a stove constructed as shown, I place a small quantity of coal (anthracite or bituminous) upon the grate, and then put fire-kindling material on top of the coal, and open the damper *n* in the tube *m*, and the damper L, and close the damper S

in the tube *r* before lighting the kindling. When the kindling is lighted, the draft will be downward through the coal and grate, and from thence through the tube *m* into the radiator, and upward through its contracted top into the escape flue. After the coal is ignited, I fill the fuel-chamber with fuel up to the door H, or put in less, when desired, close the door of the fuel-chamber and the dampers L and *n*, and open the register in the cap H<sup>3</sup>. The draft will then be down from the grate and combustion-chamber and its extension G<sup>3</sup> into the hollow base and around the inner wall and deflector D, and from thence up through one of the compartments of the radiator and over the partition K<sup>2</sup>, down again through the central compartment, and under the partition K<sup>3</sup> into the third compartment, from whence it passes upward into the escape flue connected with the top of the radiator. The quantity of cold air admitted in the top of the fuel-chamber and regulated by means of a register combined therewith passes through the fuel and the conduits and superheaters J and J<sup>2</sup> to feed the fire as required to produce combustion at the bottom of the fuel-chamber and the under particles of fuel on the top of the grate. The air thus admitted in the top carries along all gases and odors from the fuel in the fuel-chamber into the combustion-chamber, to aid in burning the fuel and utilizing all the valuable products of combustion by preventing the generation and escape of black smoke and soot. The circulation of the heat thus produced through the base of the stove, and from thence in reverse ways through the radiator, diffuses the heat over and through a large area of heating-surface, as required, to utilize the heat in warming the atmosphere in a room economically and without the annoyances and dangers incident to the generation and escape of offensive odors, gases, black smoke, and soot. Whenever the base of the stove is opened while the fire is burning, the damper S in the tube *r* should be opened to prevent the escape of gas.

I claim as my invention—

1. The combination of a shouldered case or body having openings at its top to admit air and an opening to admit fuel, a grate, a cylinder below said case or body having a draft-flue at its bottom and a draft-flue under the grate

in its top and open-ended tubes extending from the shoulder in the top of said case or body into the said cylinder, and under the said grate, to operate in the manner set forth.

2. The combination of the base A, having an inner wall, D, a vertical partition, D<sup>3</sup>, the flue-base G G<sup>2</sup>, having a top opening, G<sup>4</sup>, the cylinder F, formed with a lateral extension, G, the main body or casing, a grate forming a fuel-chamber and combustion-chamber in said body and cylinder, and a flue connected with the flue-base, to operate in the manner set forth, for the purposes stated.

3. The combination of a casing or body, a flue leading from its lower portion, a grate dividing it into a fuel-chamber above and a combustion-chamber below the grate, and a superheating-conduit, J, exterior to the body or casing, opening at its upper end into the chamber above the grate and at its lower end into the chamber below the grate, substantially as described.

4. The combination of a casing or body having an opening in its top, a flue leading from its lower portion, a grate dividing it into a fuel-chamber above and a combustion-chamber below the grate, superheating-conduits J exterior to the body or casing, opening at their upper ends into the chamber above the grate and into the chamber below the grate at their lower ends, and a draft-flue at the top of the said chamber under the grate, substantially as shown and described, for the purposes stated.

5. An improved stove consisting of a base, A, having an inner deflecting-wall, D, a horizontal partition, D<sup>2</sup>, and a vertical partition, D<sup>3</sup>, a cylinder and combustion-chamber, F, having flues *m* and G<sup>3</sup>, a flue and radiator base, G<sup>2</sup>, having a cover, G, a fuel-chamber, H, above the combustion-chamber and having openings in its top, a grate separating the fuel-chamber and combustion-chamber, one or more superheating-conduits extending from the upper portion of the fuel-chamber to the combustion-chamber, and a radiating-flue, K, having fixed partitions K<sup>2</sup> and K<sup>3</sup>, and a chamber, L, substantially as set forth.

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Witnesses:

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