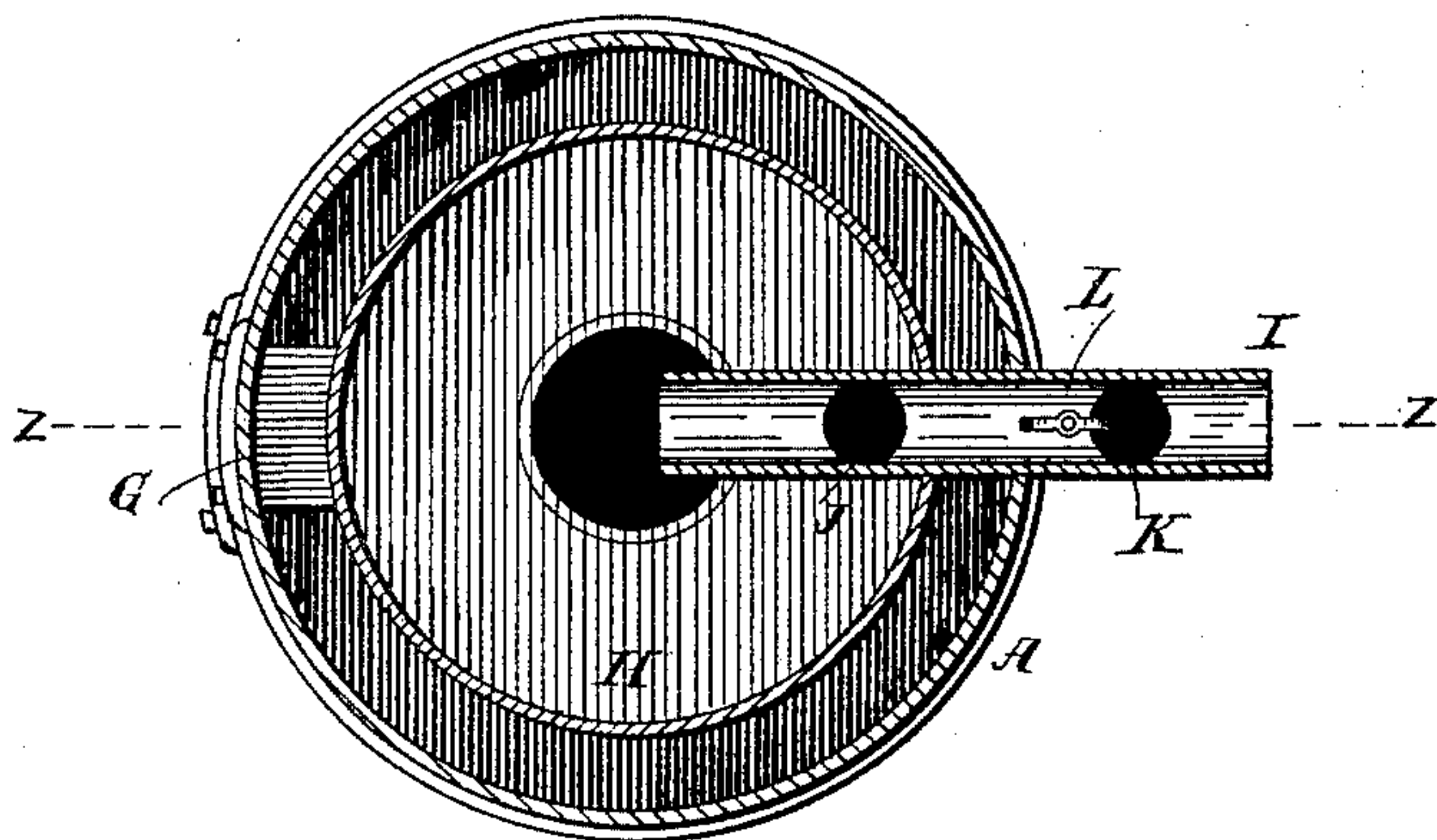
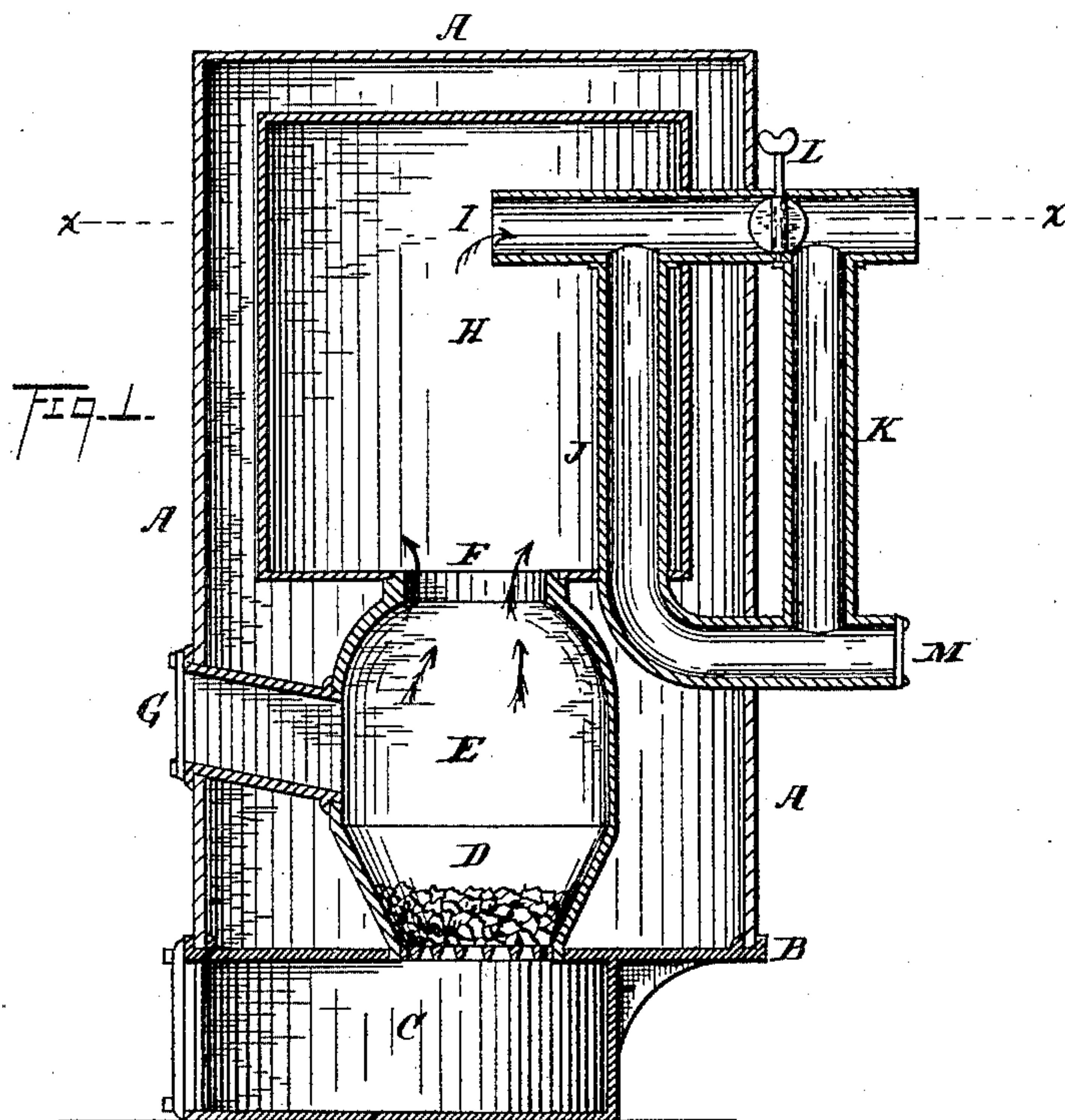


(No Model.)

R. A. MAY.  
HEATING FURNACE.

No. 442,291.

Patented Dec. 9, 1890.



Witnesses.

Belle S. Lounie  
C. E. Humphrey

FIG. 2.

Inventor.

Rudolph A. May,  
by Humphrey  
Attorney.



# UNITED STATES PATENT OFFICE.

RUDOLPH A. MAY, OF AKRON, OHIO.

## HEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 442,291, dated December 9, 1890.

Application filed April 18, 1890. Serial No. 348,490. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLPH A. MAY, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Heating-Furnaces, of which the following is a specification.

My invention relates, generally, to improvements in that class of heating-furnaces having an enlarged combustion-chamber above the fire-pot, and has special relation to furnaces of this class in which bituminous coal is used as fuel and in which a contracted space is interposed above the fire-pot and between it and the combustion-chamber.

The objects of my invention are to secure by means of circulating currents in the combustion-chamber a more perfect burning of the gases arising from the fuel, to provide a new and improved diving-flue, and by means of these to obtain an increase of heat from the amount of fuel consumed.

To the above objects my invention consists in the peculiar and novel construction and combination of parts hereinafter described, and then specifically pointed out in the claim, reference being had to the accompanying drawings, forming a part of this specification.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a vertical central section at the line  $z z$  of Fig. 2 of a heating-furnace embodying my invention; Fig. 2, a horizontal section of the same at the line  $x x$  of Fig. 1.

Referring to these drawings, A is the outer case, in which the air is heated by radiation from the inclosed parts. This case rests on a rim B, which extends horizontally above the ash-pit C. Resting on the ash-pit C is the fire-pot D, having a dome-shaped top E, having a contracted top F, and a feeding-spout G, which extends through the case A and is closed with a door in the usual manner.

Mounted on the top E is a cylindrical drum H, larger in diameter and height than the fire-pot, and which I have heretofore referred to and for the purposes of this application designate as the "combustion-chamber."

I am aware that this part has been variously denominated in applications for patents and in trade-circulars as the "heating-drum," the

"radiating drum," and other similar terms; but as in it the unconsumed and uncombined gases which arise as products of combustion from the fuel in the fire-pot are finally partially or wholly burned the term which I have adopted seems preferable.

Extending from the horizontal center and slightly above the vertical center of this combustion-chamber is a pipe or flue I, which, passing through the case A, is connected with the chimney and constitutes the uptake-flue for the furnace.

Connected with the flue I inside of the chamber H is a diving-flue J, which extends through the bottom of the chamber H and then curves outward, passing through the case A and terminating in a cleaning-gate M.

Uniting the flues I and J outside of the case A is a flue K, and in the flue I, between its points of union with the flues J K, is a gate L, by which it may be closed.

In operation the products of combustion from the fuel in the fire-pot D, rising through the contracted space F, lose their momentum as they enter the enlarged chamber H and expand and fill said chamber, giving them an opportunity to burn instead of being directly drawn into the uptake-flue. By placing the opening of the flue I in the horizontal and near the vertical center of this chamber H this result is greatly increased, as the currents of gas circulate on every side around and above said opening before they pass out, thus retarding their escape and securing a more perfect combustion than if the uptake-flue were in the top or at one side of the chamber A as ordinarily constructed, in which cases a direct current is created between the contracted opening F and the mouth of the uptake-flue. By turning the gate L the products of combustion pass down through the diving-flue J and connecting-flue K. By this arrangement the diving-flue J is heated both externally and internally, and not only communicates this increased heat by radiation to the air inside of the case A, but by reason of this increased heat the deposit of soot or condensed carbon therein is prevented.

I claim as my invention—

In a furnace of the kind specified, the combination, with the enlarged combustion-cham-

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ber and the uptake-flue terminating substantially horizontally and vertically centrally therein, of a diving-flue connected with said uptake-flue inside of said chamber, extending  
5 downward in and through said chamber, a second flue connecting said diving-flue and uptake-flue outside of said chamber, and a gate to divert the products of combustion through said diving and second flues, substantially

as shown and described, and for the purpose specified.

In testimony that I claim the above I hereunto set my hand.

RUDOLPH A. MAY.

In presence of—

C. P. HUMPHREY,

C. E. HUMPHREY.