

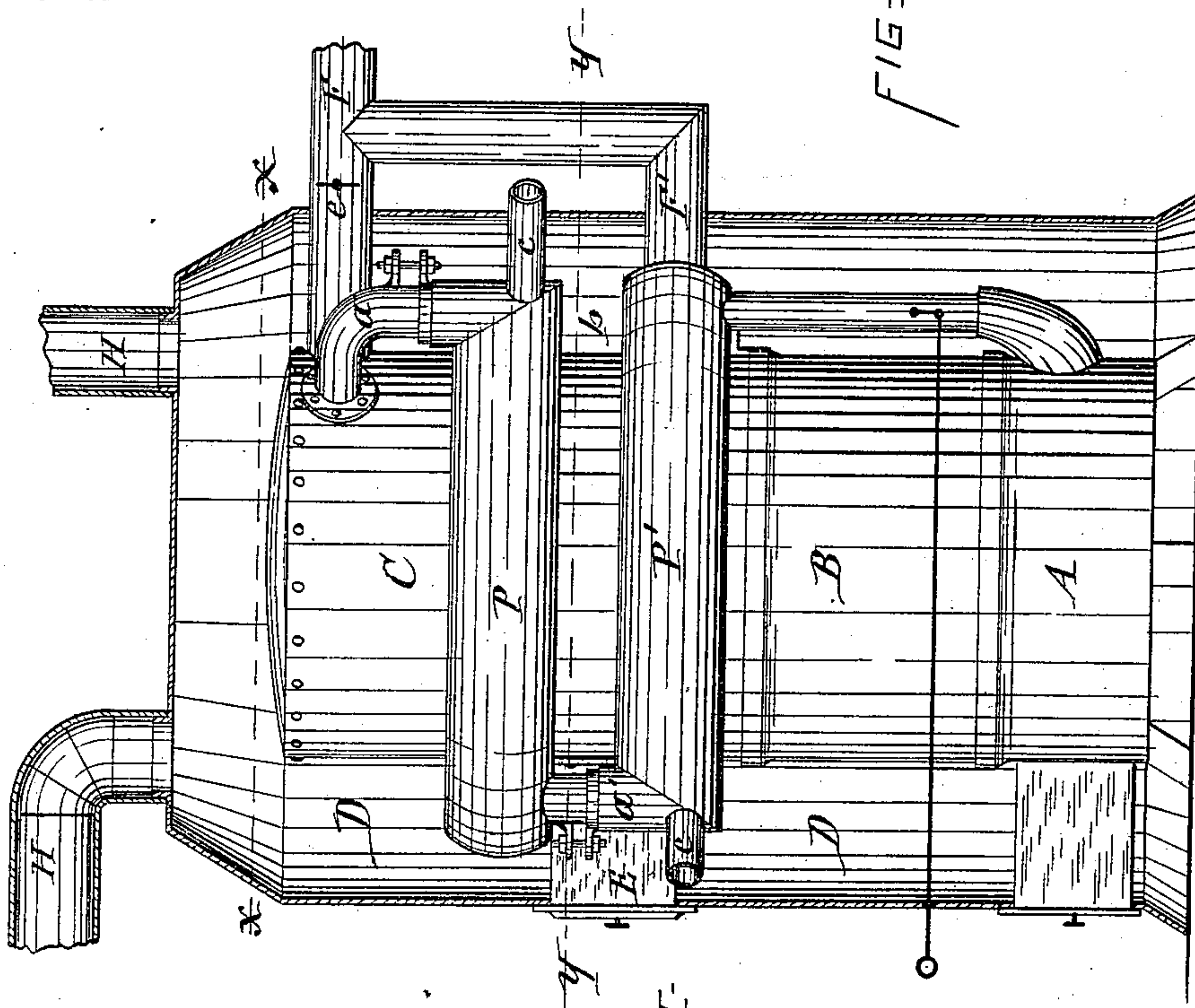
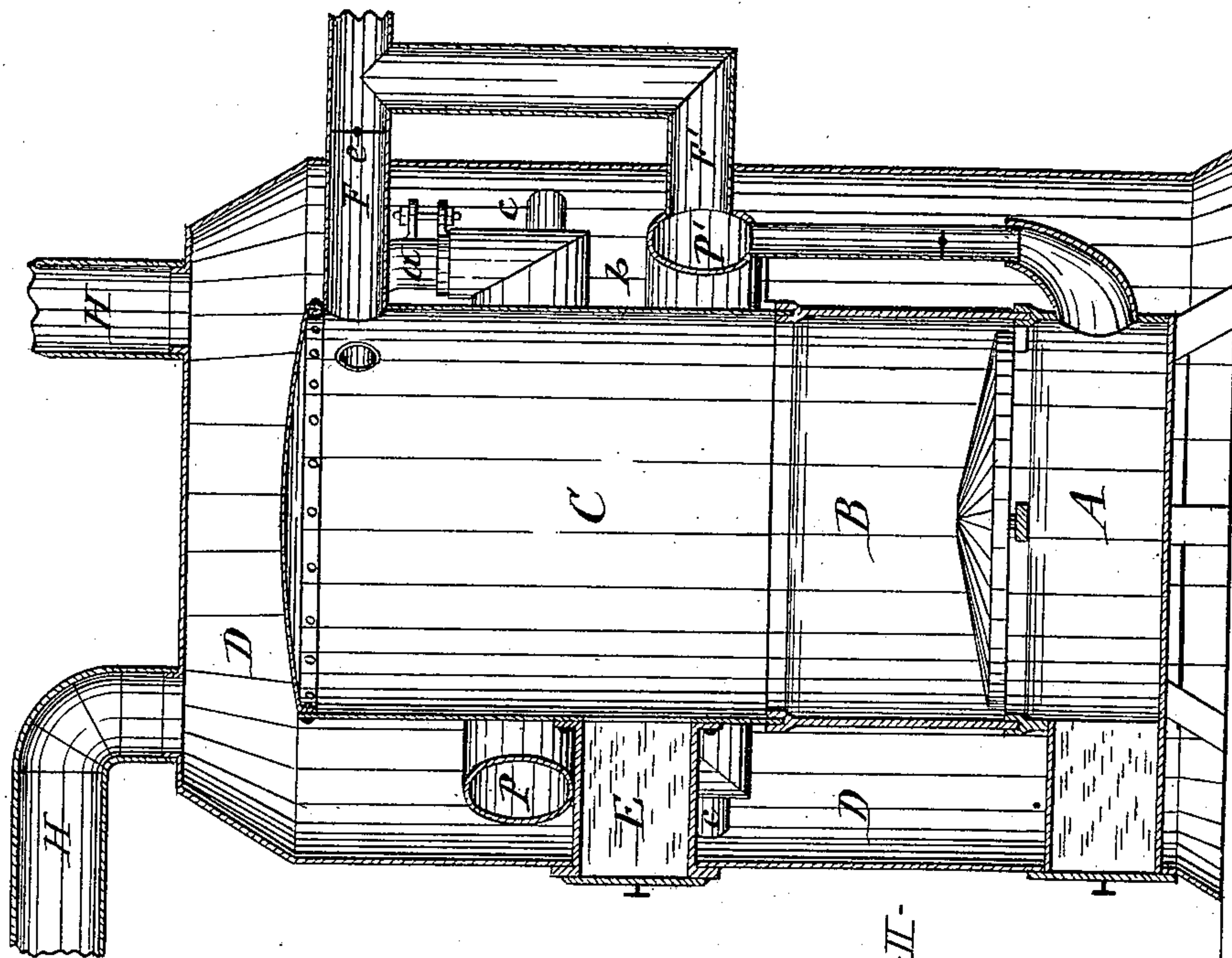
(No Model.)

2 Sheets—Sheet 1.

J. F. PEASE.
HOT AIR FURNACE.

No. 350,601.

Patented Oct. 12, 1886.



WITNESSES

C. Bendixon

E. C. Cannon

INVENTOR

John F. Pease

per Lindell Laaseth
his Attorney

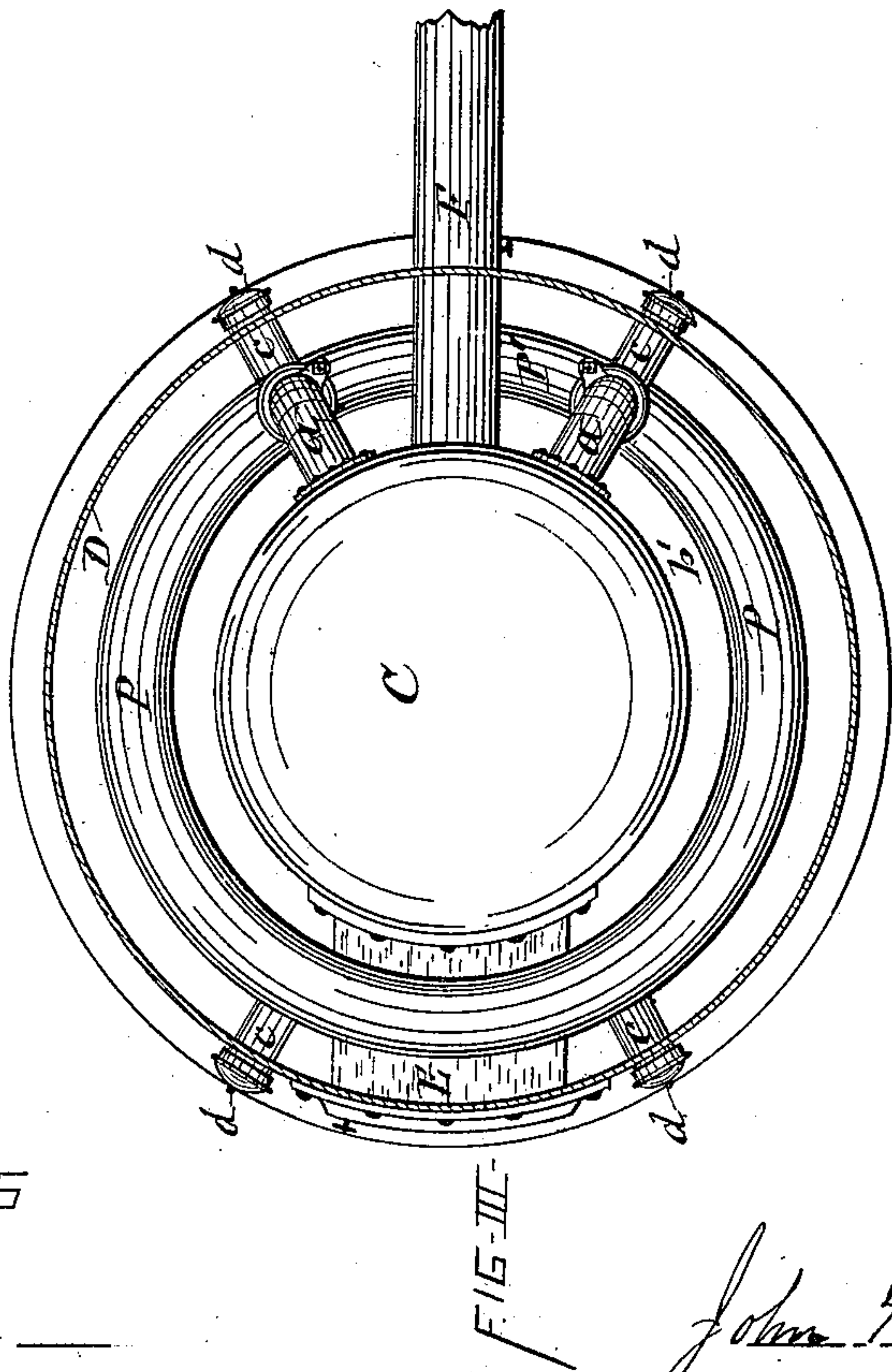
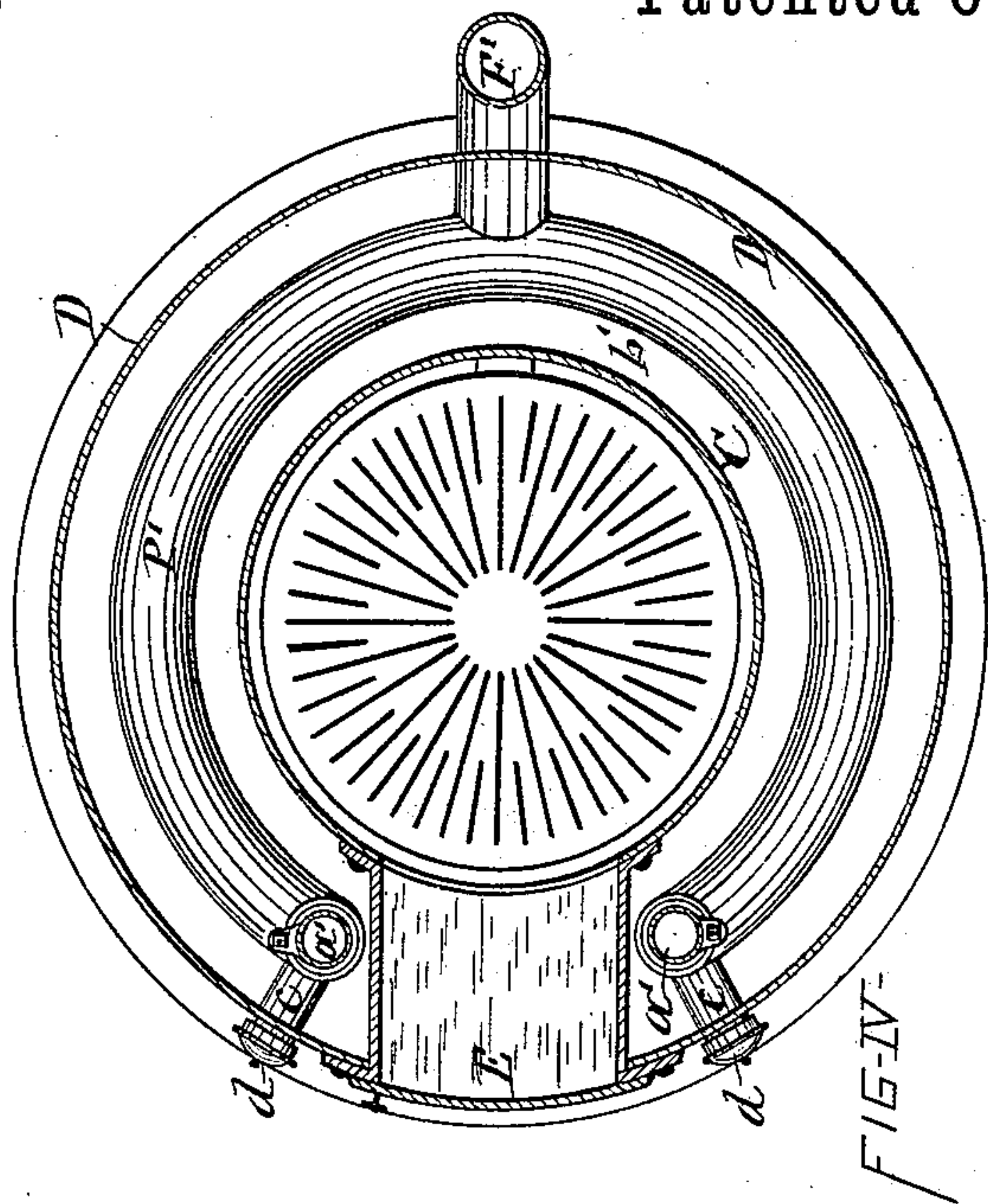
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his Atty

UNITED STATES PATENT OFFICE.

JOHN F. PEASE, OF SYRACUSE, NEW YORK.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 350,601, dated October 12, 1886.

Application filed November 16, 1885. Serial No. 183,917. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. PEASE, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful
5 Improvements in Hot-Air Furnaces, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of hot-air
10 furnaces which have around the exterior of the combustion-chamber tortuous fire-flues, constituting heat-radiators, which increase the heating capacity of the furnace; and the invention consists in an improved construction and com-
15 bination of the aforesaid radiators and their connections with each other and with the combustion-chamber, all as hereinafter more fully described, and specifically set forth in the claims.

20 In the annexed drawings, Figure I is a side elevation of the furnace with the inclosing-casing shown in section. Fig. II is a vertical transverse section of the same; and Figs. III and IV are horizontal sections taken, respectively, on lines *x x* and *y y*, Fig. I.

Similar letters of reference indicate corresponding parts.

A represents the ash box or pit, upon which is mounted the fire-pot B, and upon the latter
30 is seated the combustion-chamber C, in the usual manner. The combustion-chamber is provided with the feed-door E, through which to introduce the fuel.

D denotes the usual casing, which incloses
35 the furnace, and may consist either of masonry or of metal, as shown. The air to be heated is admitted to the interior of the casing D at the base thereof, and from thence it rises and circulates around the fire-pot and combustion-
40 chamber and passes out through the hot-air pipes H H, which are extended from the top of the casing to the apartments to be heated.

In order to augment the heating capacity of the furnace, the heating-surface thereof has
45 been increased by radiators of various descriptions connected with the furnace in such a manner as to receive through them the products of combustion, and the efficiency of such radiators depends chiefly on their construction.

50 To this important feature my present invention is directed. I form two radiators of pipes, *p p'*, arranged horizontally one above the other,

and extended in the form of segments around the exterior of the combustion-chamber, with air-passages *b b'* between them and at the sides
55 adjacent to the combustion-chamber. The upper pipe or radiator, P, is extended around the front portion of the combustion-chamber C and terminates at the rear portion of the same, and communicates thereat with the up-
60 per part of the combustion-chamber by pipes *a a*, extending from the ends of the radiator to the said part of the combustion-chamber, as shown in Fig. I of the drawings. The lower radiator, P', is extended around the rear por-
65 tion of the combustion-chamber and terminates in front thereof at opposite sides of the feed-door E, as illustrated in Fig. 4 of the drawings, and communicates at its ends with the upper radiator, P, by pipes *a' a'*, rising
70 from the former to the latter. Each of said radiators is provided at its ends with cleaning-flues *c c*, which extend through the casing D, and are provided at their outer ends with re-
75 movable covers *d d*, said flues affording convenient access to the interior of the radiators for a broom or scraper to remove the dust and soot therefrom.

F denotes the direct exit-flue connected to the upper part of the combustion-chamber
80 at the rear, and F' is an exit-flue extended from the lower radiator, *p'*, to the direct flue F. A damper, *e*, is connected with the direct flue between the combustion-chamber and intersection of the flue F', and by clos-
85 ing said damper the products of combustion are compelled to assume the circuitous passage from the top of the combustion-chamber to the ends of the upper radiator, P, thence forward in said radiator at opposite sides of the com-
90 bustion-chamber, and down through the pipes *a' a'* to the ends of the lower radiator, P', thence back toward the rear of the combustion-chamber at opposite sides thereof, and out through the exit-flue F'. In said circuitous passage of
95 the products of combustion the radiators are thoroughly heated, and the heat is absorbed therefrom by the air rising from the bottom of the casing D and circulating through the pas-
100 sages *b b'* around the exterior of the radiators, and thence on to the apartments to be heated.

It will be observed that the course of the products of combustion is not only circuitous, but also partly downward, thereby retarding

the escape of the products of combustion and insuring the retention of the heat in the radiators.

I designate the dust-pipe, which leads from the ash-pit A, and has hitherto been extended either to the exit-flue or to the combustion-chamber to convey thereto the dust created in the ash-pit during the operation of shaking the grate. I now extend said dust-pipe into one of the radiators, preferably the lower radiator, P', from which the dust can be removed through the cleaning-flue c, hereinbefore referred to. Said dust-pipe is provided with the usual damper by which to close said pipe after the ashes have escaped from the ash-pit through the pipe.

Having described my invention, what I claim is—

1. The combination, with the fire-pot and combustion-chamber, of segmental radiators extending around the exterior of the combustion-chamber and terminating at opposite sides of the latter, one of said radiators communicating at its ends with the combustion-chamber, and the other radiator communicating at its ends with the first radiator, and an exit-flue connected with the last radiator, substantially as set forth.

2. The combination, with the fire-pot and combustion-chamber, of two radiators surrounding the combustion-chamber, one of said radiators communicating with the combustion-chamber at one side of the circumference thereof, the other radiator communicating with the first radiator at the opposite side of the circumference of the combustion-chamber, a direct exit-flue extended from the combustion-chamber, an indirect exit-flue extended from the second radiator to the direct exit-flue, and

a damper in one of said exit-flues, substantially as set forth and shown.

3. In combination with the combustion-chamber and inclosing-casing, two radiators arranged one above the other and surrounding the combustion-chamber, one of said radiators extending around the front of the combustion-chamber and communicating with the same at the rear, and the other radiator extending around the rear of the combustion-chamber and communicating with the first of said radiators at the front and provided with an exit-flue at the rear, substantially as described and shown.

4. In combination with the combustion-chamber C and casing D, the pipe P, extending around the front portion of the combustion-chamber and terminating at the rear of said chamber, and provided thereat with the pipes a a, extending to the upper part of the combustion-chamber, the pipe P', arranged below the pipe P, and extending around the rear portion of the combustion-chamber, pipes a' a', connecting the pipe P' with the pipe P at the front of the combustion-chamber, cleaning-flues c c, extending from the ends of the pipes P P' through the casing outward, and the exit-flue F', connected to the rear portion of the pipe P', all combined substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 11th day of November, 1885.

JOHN F. PEASE. [L. S.]

Witnesses:

C. H. DUELL,
FREDERICK H. GIBBS.