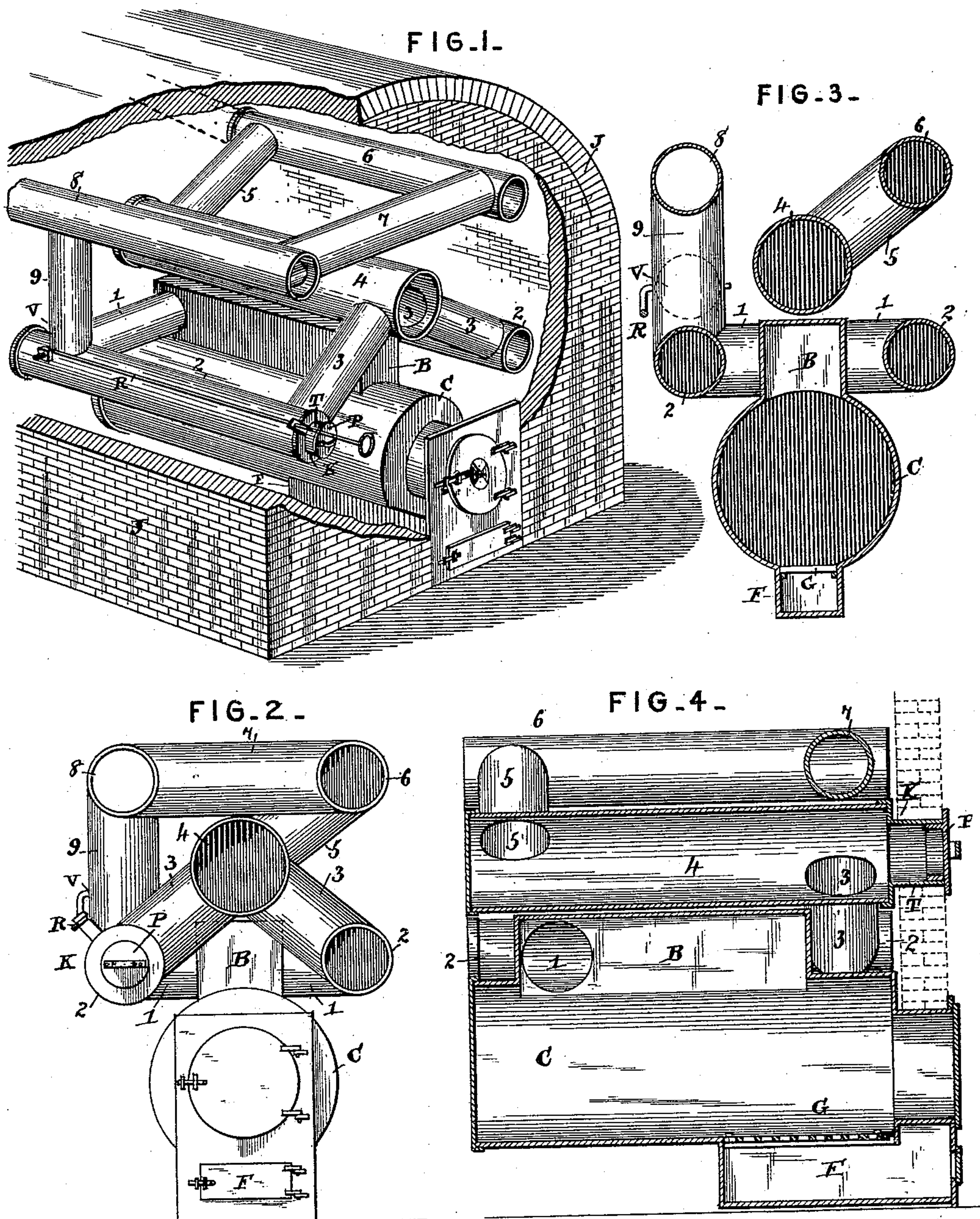


(No Model.)

F. F. THEDENS.
FURNACE.

No. 472,183.

Patented Apr. 5, 1892.



Witnesses

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FERDINAND FRIDRICH THEDENS, OF LYONS, IOWA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 472,183, dated April 5, 1892.

Application filed February 4, 1891. Serial No. 380,130. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND FRIDRICH THEDENS, a citizen of the United States, residing at Lyons, in the county of Clinton and State of Iowa, have invented a new and useful Furnace, of which the following is a specification.

This invention relates to furnaces; and the object of the same is to effect improvements in the construction thereof, whereby the smoke and other products of combustion will at all times have an upward course from the fire-pot, so as to avoid the production of creosote.

To this end the invention consists of the details of construction hereinafter specifically pointed out and claimed, and, as illustrated on the sheet of drawings, wherein—

Figure 1 is a perspective view of this furnace complete, part of the hot-air jacket being broken away to show the interior construction. Fig. 2 is a front elevation. Fig. 3 is a central vertical cross-section. Fig. 4 is a longitudinal section.

Referring to the said drawings, the letter F designates the ash-pit, and G the grate. Above the grate is a large cylindrical chamber C, upon whose upper side and communicating therewith throughout its entire length is a box B, rectangular in shape and extended materially above the top of said cylinder, to collect, distribute, and radiate the heat, in combination with the various flues, as will be readily apparent. The various flues through which the products of combustion are passed after leaving this box are arranged at the sides and above the box, and all within the hot-air jacket J, which is of brick-work or masonry and surrounds the entire furnace proper at such a distance therefrom as to leave sufficient room for heating the air within the jacket by the furnace. This air is afterward conveyed through hot-air flues to various points in the building or dwelling and there delivered through registers into the rooms to be heated, all in a manner well understood.

Extending laterally and in both directions from the rear end of the box B are comparatively short tubes 1, which communicate with the lower flues 2 near their rear ends. These flues extend forwardly along the sides of the

box B and in such proximity to the same that the heat radiated from its side will materially assist to heat said side tubes and keep the air passing therethrough thoroughly heated, and near their front ends communicate, by inwardly and upwardly inclined tubes 3, with a large central flue 4, which stands directly above the box B, in close proximity thereto, to receive the benefit of the radiated heat therefrom, as said side flues. The particular construction of said elongated box allows for this essential arrangement of flues, which is not found in furnaces of this character. From a point near the rear end of this central flue a single tube 5 extends upwardly and outwardly into one of the upper flues 6, standing about above the right-hand lower flue 2, and this flue communicates near its front end through a cross-tube 7, which passes over the central flue 4, with the front end of the other upper flue 8, the rear end of this flue communicating with the chimney in a manner well understood. From the left-hand lower flue 2, near its rear end and adjacent the opening of the tube 1, rises a tube 9, which communicates with the left-hand upper flue 8 near its rear end and hence near the chimney, and in this vertical tube is located a valve V, controlled by a rod R, extending to the front of the furnace. It will thus be seen that when a fire is built upon the grate G within the chamber C the most excessive heat therefrom occurs within the box B. Thence the products of combustion pass outwardly in the tubes 1, forwardly in the flues 2, upwardly and inwardly in the tubes 3, and rearwardly in the large central flue 4. Within this flue, which is situated directly above the box B and receives the greatest heat of any of the flues, all the combustible particles or gases which remain in the smoke are burned, and hence the greatest heat possible is obtained from the fuel, and no creosote or soot is given off to choke up the chimney. From the rear end of this large central flue 4 the smoke passes upwardly and outwardly in the tube 5, thence forwardly in the upper flue 6, thence across in the front tube 7, and thence rearwardly in the other upper flue 8 into the chimney and out into the air. In case it is desired to have a more direct draft than just

described, the valve V is opened by manipulating the valve R, and the rear end of the left lower flue 2 is thereby connected with the rear end of the upper flue 8. This produces
 5 a short and direct opening from one side of the box B to the chimney and will consequently cut out all the flues, because the smoke will seek the shortest path. This change in the path of the smoke is service-
 10 able when the fire is being built.

Although I have shown the front ends of several of the flues as open, it will be understood that they are intended to be closed by a suitable cap K, preferably provided with a
 15 tubular projection T, and into the front end of this projection fits a closing cover or plug P. When it is desired to clean the flues, these plugs are removed and a suitable cleaner run through the lengths of the flues in
 20 the well-known manner. When the fire is burning and the products of combustion are passing through the various flues and tubes, the air which is within the jacket J around the furnace proper is heated, and, as above stated,
 25 it is passed up into the building through suitable flues or pipes in a manner well understood in this art. It will be noticed that the smoke at no point in the furnace passes downwardly, although at several points it moves
 30 horizontally. It is well known to those skilled in this art that if smoke or products of combustion be passed downwardly the result will be the accumulation of soot and

creosote, and hence my improved furnace avoids this difficulty. 35

What is claimed as new is—

The herein-described furnace, the same comprising the fire-pot C, an elongated rectangular dome or box B, mounted thereon and communicating throughout its length there- 40 with, pipes 1, leading from the rear end and opposite sides of the box or dome, opposite horizontal pipes 2, extending parallel to the box or dome B and communicating at their rear ends with the pipe 1, the main flue 4, lo- 45 cated above the box or dome B and larger than the pipes 2, inclined inwardly-disposed pipes 3, leading from the front ends of the pipes 2 to the front end of the main flue 4, the pipes 6 and 8 above the pipes 2, the pipe 50 8, leading to the chimney, the transverse pipe 7, connecting the front ends of the pipes 6 and 8, the inclined pipe 5, leading from the rear end of the main flue 4 to the rear end of the pipe 6, the short vertical pipe 9, connect- 55 ing the rear ends of the pipes 2 and 8, and the valve V, located in the short vertical pipe 9, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 60 presence of two witnesses.

FERDINAND FRIDRICH THEDENS.

Witnesses:

C. L. ROOT,
 W. C. GROHE.