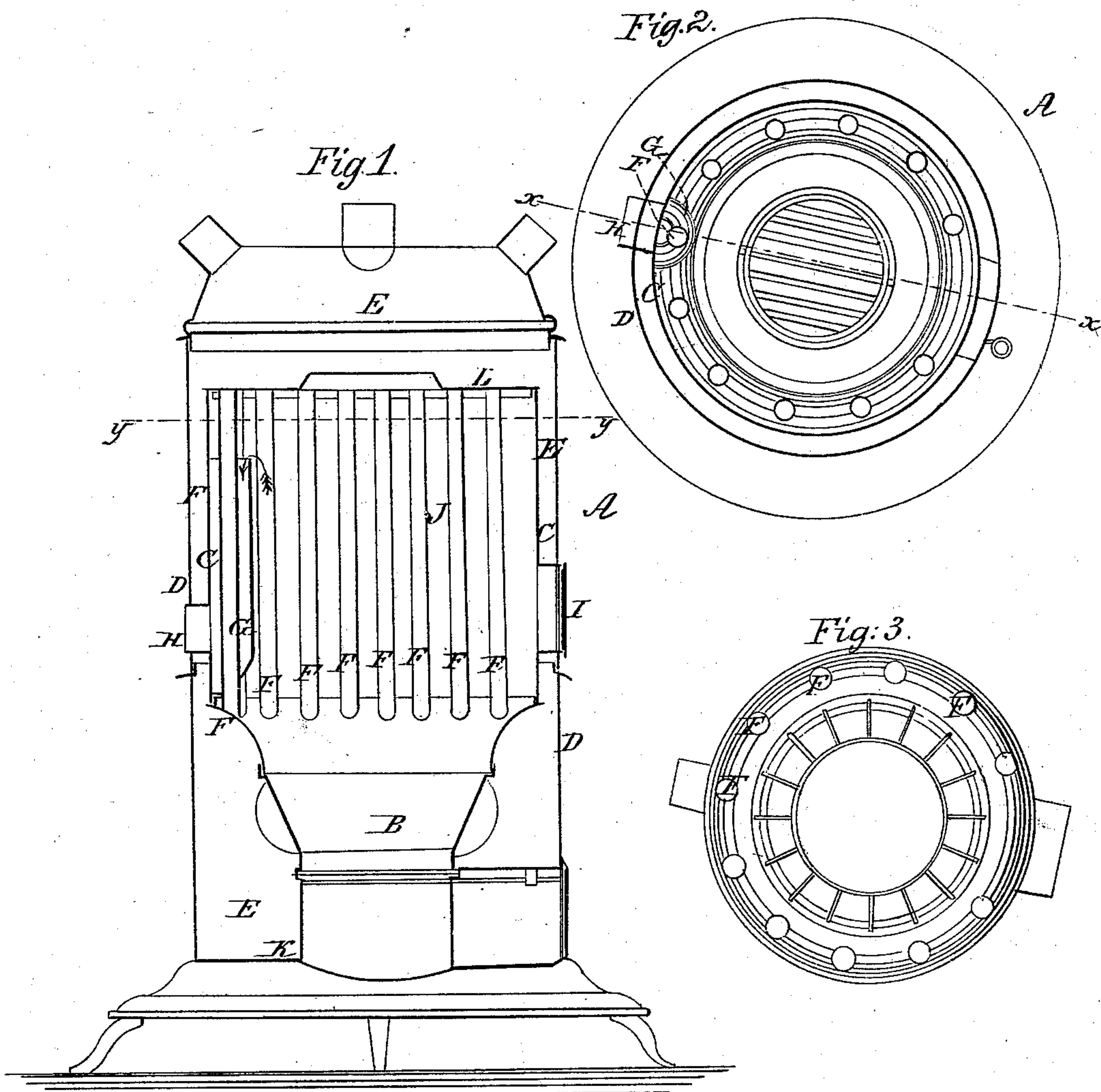


N. A. BOYNTON.

Coal Stove.

No. 55,997.

Patented July 3, 1866.



Witnesses;
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UNITED STATES PATENT OFFICE.

NATHANIEL A. BOYNTON, OF NEW YORK, N. Y.

COAL-STOVE.

Specification forming part of Letters Patent No. 55,997, dated July 3, 1866.

To all whom it may concern:

Be it known that I, NATHANIEL A. BOYNTON, of the city, county, and State of New York, have invented a new and useful Improvement in Heaters; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a heater made according to my invention, the plane of section being seen at the line *x*, Fig. 2. Fig. 2 is a horizontal section on the line *y*, Fig. 1. Fig. 3 is an inverted view of the fire-pot, the grate being removed.

The object of this invention is the improvement of that class of stoves which are commonly called "heaters," because they are made with large radiating-surfaces and air-pipes, in order to provide supplies of hot air for warming apartments.

It consists in providing a novel course for the products of combustion on their way to the exit-flue, according to which they are conducted, first, to the upper part of the combustion-chamber, where they surround the air-pipes that ascend through that chamber, and thence downward through a descending flue, made around one of the air-flues, nearly to the level of the fire-pot, and thence into the exit-flue.

The letter A designates the heater. The fire-pot B has a series of vertical flanges on its exterior, which both strengthen it and increase the radiating surface. The top of the fire-pot flares rapidly toward the bottom of the cylinder C, which is inclosed by a top plate, L, that rises into a conical shape at its center. The fire-pot is provided with the usual grate and ash-pit.

The fire-pot B and cylinder C are inclosed by another cylinder, D, whose bottom K has large openings (not seen in the drawings) through it, for the purpose of letting the air have free access to the interior of the heater, passing upward outside of the fire-pot. The top of the cylinder D rises above cylinder C, and has several air-pipes leading off from it.

An annular space, E, is left between the two cylinders, which space expands greatly in size about the fire-pot and ash-pit, and also above the top L of the inner cylinder. A passage is made through this space both for the doorway of the ash-pit and for a doorway, L, to the fire-pot, and the smoke-exit pipe H also

crosses this space on the side opposite to the doorway L.

The space E forms an air-space, the upper and lower parts of which, besides being connected by the narrow annular space contained between the cylinders C and D, are also connected by numerous open air tubes or pipes F, whose lower ends go through the flaring rim of the fire-pot, and their upper ends go through the top plate, L, of cylinder C. These tubes are arranged in circular order at a little distance from the inner circumference of said cylinder C, and since they go through the combustion-chamber J, the hot air and gases which arise from the fire are free to circulate about them as they ascend toward the upper part of the cylinder.

The receiving-mouth of exit-flue H communicates with the interior of cylinder C by means of a semicircular flue, G, closed at its bottom, but open at top, its top being carried nearly as high as the top L, and its bottom being carried almost to the top of the fire-pot.

The edges of the piece which forms the flue G are connected to the inner surface of cylinder C, and said flue incloses one of the air-flues F, being of such a radius as to allow sufficient space between its surface and the exterior of the air-flue to permit the free passage of the products of combustion.

The arrow in Fig. 1 shows the course of the products of combustion as they leave the combustion-chamber J and enter the descending flue G on their way to the exit-pipe H. On their way to said exit-pipe they impart most of the heat still retained by them to the air-flue F, and thereby increase the temperature of the air which is passing upward through it, the products of combustion being eventually discharged from the pipe H in a comparatively cool state, owing to the loss of caloric during their passage down the descending flue G.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the flanged fire-chamber B, cylinder C, cylinder D, with perforated bottom K, forming an annular space, E, air-flues F, semicircular flue G, and exit-flue H, all arranged and operating in the manner and for the purpose herein described.

N. A. BOYNTON.

Witnesses:

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