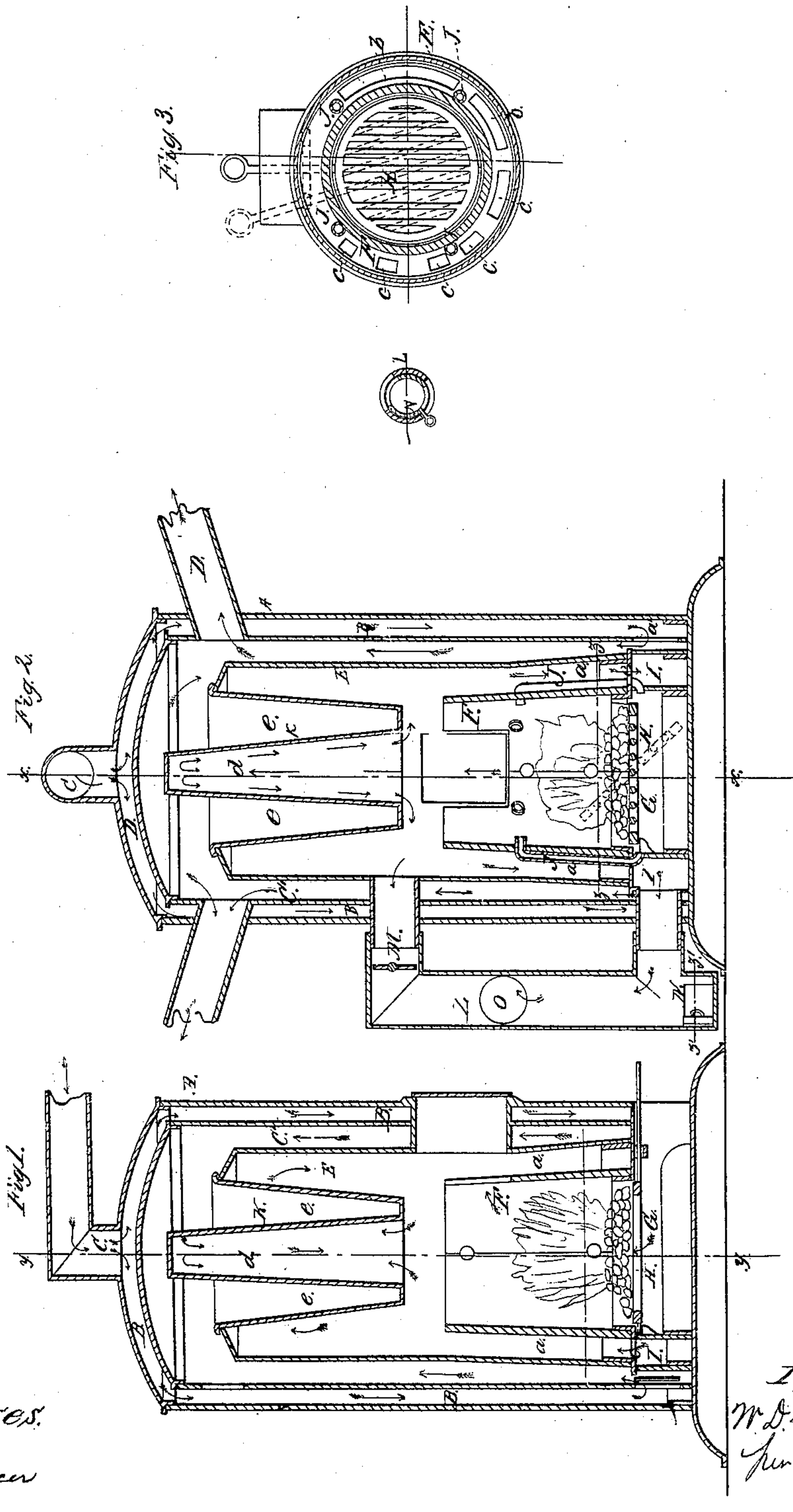


W. D. BARTLETT.
AIR HEATING FURNACE.

No. 32,955.

Patented July 30, 1861.



Witnesses:
J. W. Combs
R. S. Spencer

Inventor:
W. D. Bartlett
per Munn & Co
Attorneys

UNITED STATES PATENT OFFICE.

WM. D. BARTLETT, OF AMESBURY, MASSACHUSETTS.

FURNACE FOR HEATING BUILDINGS.

Specification of Letters Patent No. 32,955, dated July 30, 1861.

To all whom it may concern:

Be it known that I, W. D. BARTLETT, of Amesbury, in the county of Essex and State of Massachusetts, have invented a new and Improved Air-Heating Furnace; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical central section of my invention taken in the line x, x , Fig. 2. Fig. 2, is also a vertical central section of my invention, taken in the line y, y , Fig. 1. Fig. 3, a horizontal section of the same, taken in the line z, z , Figs. 1 and 2. Fig. 4, a horizontal section of the smoke pipe, taken in the line z', z' , Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A. represents the exterior wall of the device, which may be of masonry and which incloses the whole apparatus.

The compartment B. is closely covered or arched over and has a cold air induction pipe C. leading into its upper end as shown clearly in Figs. 1 and 2.

Within the compartment B. there is placed concentrically a cylinder C'. which is also closely covered and has pipes D. D. leading from it, as shown clearly in Fig. 2. The space between the cylinder C. and the wall A. forms a cold-air chamber.

Within the cylinder C'. a stove is placed. This stove is formed of a cylinder E. fitted over a fire pot F., the latter being over an ash pit G. At the bottom of the fire pot F. there is placed a grate H. which is hung on central pivots or an axis so that it may be turned, as shown in red in Fig. 2, and also vibrated horizontally as indicated by the position in red in Fig. 3. The fire pot may be constructed in sections, if desired, and fitted together.

The fire pot is considerably smaller in diameter than the cylinder E. so as to leave a space a , all around it between it and cylinder E. and the lower part of the space a , communicates with an annular chamber I. which encompasses the ash pit G. as shown in Fig. 2; the space a , communicates with G. by means of perforations b, c , the former

being larger than the latter, as shown clearly in Fig. 3.

J. represents air tubes the lower ends of which communicate with the ash pit G., and the upper ends communicate with the upper part of the fire pot or chamber, as shown clearly in Fig. 2. In the upper part of the cylinder E. there is fitted or placed a double conical radiator K. having an inner chamber d , and an outer chamber e , as shown clearly in Figs. 1 and 2. The inner chamber d , communicates with the interior of the cylinder E. and extends somewhat above the cylinder E. and the outer chamber e , communicates with the interior of the cylinder C'.

L. is a pipe the upper end of which communicates with the cylinder E. just above the fire pot F. as shown in Fig. 2. The lower end of this pipe communicates with the annular chamber I. In the upper part of the pipe L. there is placed a damper M. and at its lower part there is a register or valve N.

O. is the smoke pipe which communicates with the pipe L. at about its center, as shown in Fig. 2. The lower part of the compartment B. communicates by means of openings a' , with the interior of the cylinder C'. as shown clearly in Fig. 2.

The operation is as follows—The cold air descends down through the pipe C. and down through the chamber B. and then passes through the openings a' , in the lower part of the cylinder C'. and then passes upward within the cylinder C'. and into the pipes D. The air in its passage becomes thoroughly heated, the cylinder E. and radiator K. heat the compartment within C'. The radiator K. by being constructed as shown exposes a large heated surface to the air within C'. The fire pot F. is supplied with air through the ash pit G. and when a direct draft is required, as in kindling, the damper M. is opened, and the products of combustion pass into the upper end of pipe L. After the fire is kindled, or when a direct draft is not required, the damper M. is closed, and the products of combustion pass down the space a , between the fire pot F. and the cylinder E. and thence through the openings b, c , into the annular chamber I. and into the lower part of the pipe L. The smaller openings c , are over the part of the chamber I. where the lower part of the pipe L. is connected, the larger open-

ings *b*, being at the opposite part of said chamber. By this arrangement the air is evenly distributed around the fire pot *F*. as the smaller openings *c*, do not allow as free
5 an egress for the products of combustion to pass through as the larger openings *b*, and consequently the stronger draft which is at the point over the openings *c*, in consequence of their proximity to the lower orifice
10 of pipe *L*. is checked, and the draft and consequently the heat rendered equal, all around the fire pot *F*.

By having the tubes *J*. communicate with the ash pit *G*. air is admitted directly into
15 the fire pot over the fire and with its temperature somewhat raised in consequence of the tubes being in the lower part *a*, of the cylinder *E*. This warm air does not cool down the fire and it causes the combustible
20 gases to be consumed, thereby greatly economizing in fuel.

By means of the register or damper *N*. more or less cold air may be admitted into the pipe *L*. so that the draft may be checked
25 more or less as may be desired or as circumstances may require. This is a very con-

venient arrangement for placing the draft under the control of the attendant. The space *B*. within the wall or cylinder *A*. may be termed a cold air chamber, the space
30 within *C'*. a hot air chamber, and the space within *E*. an air heating chamber.

Having thus described my invention what I claim as new and desire to secure by Letters Patent; is—

1. The arrangement and combination of the cylinders *A*. *C'*. *E*. with the cold air induction pipe *C*., hot air conveying pipes
40 *D*. *D*., fire pot *F*. annular chamber *I*. and pipe *L*. substantially as and for the purpose set forth.

2. Having the openings *b*, *c*, at the bottom of the cylinder *E*. of varying size and placed in relation with the lower orifice of
45 pipe *L*. as shown and described for the purpose of equalizing the draft and consequently the heat around the fire pot *F*.

WM. D. BARTLETT.

Witnesses:

T. P. MORRILL,

THOMAS I. CLARK.