

(No Model.)

J. B. OLDERSHAW.

HOT AIR FURNACE.

No. 308,428.

Patented Nov. 25, 1884.

Fig. 1.

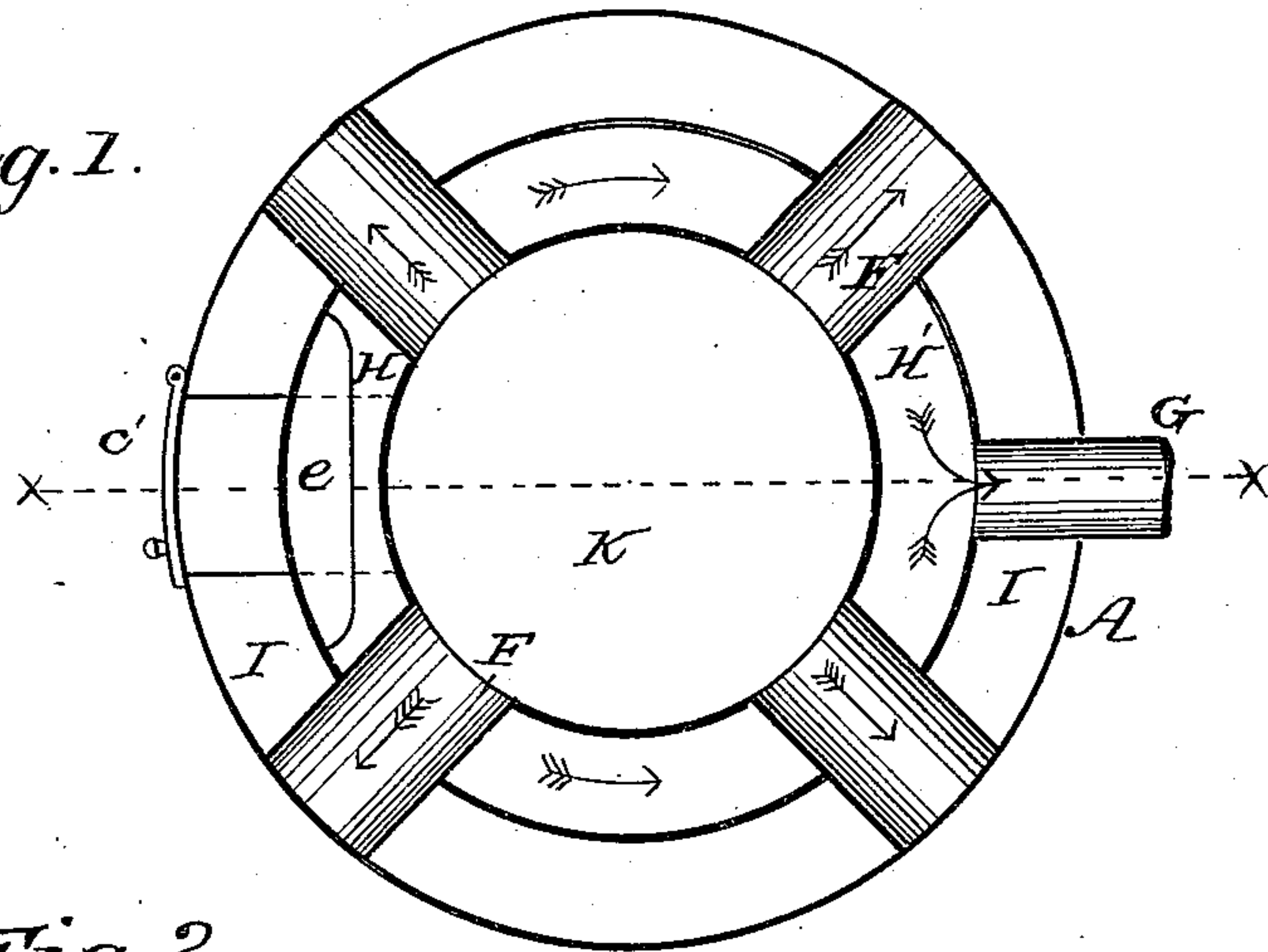
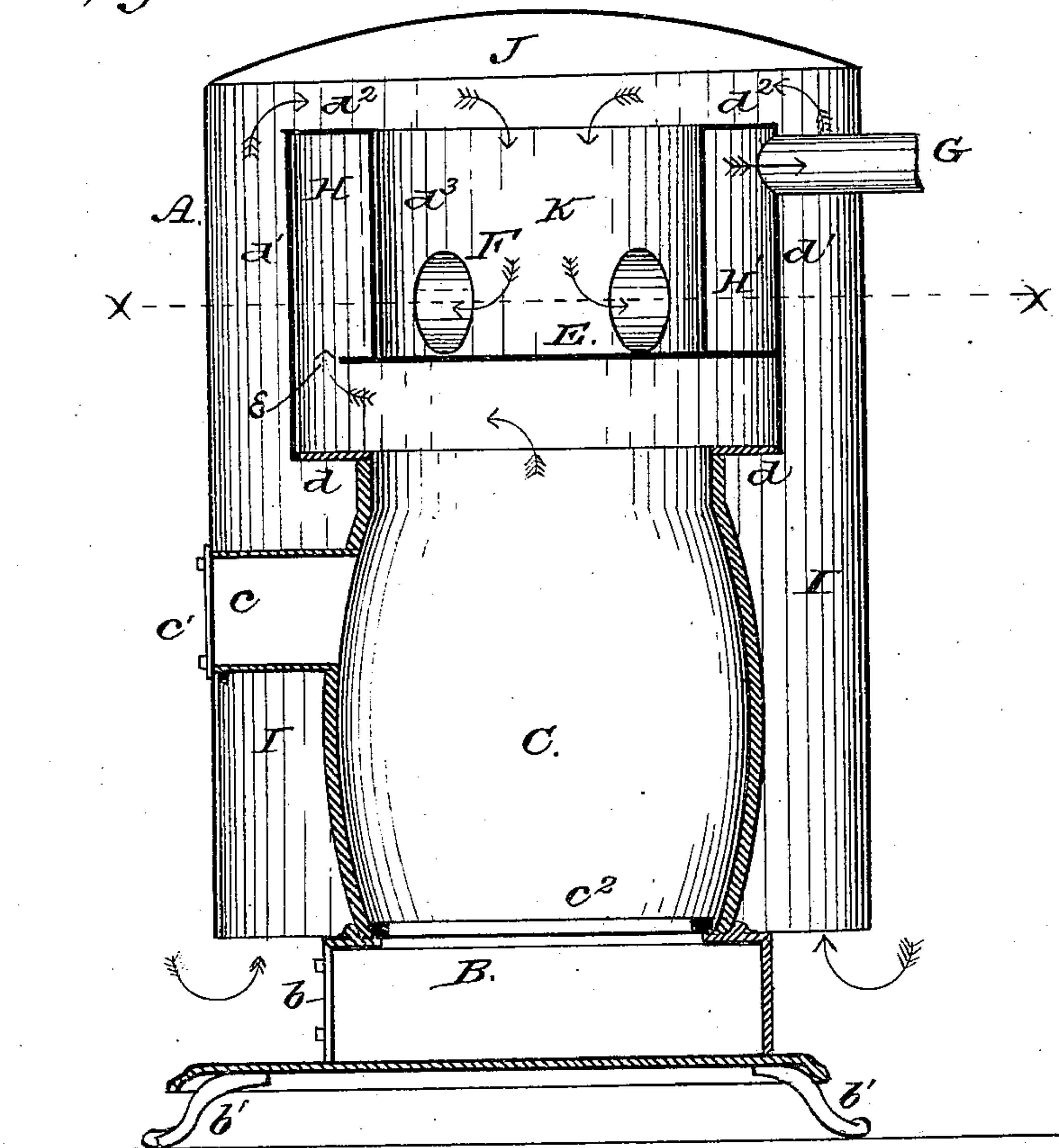


Fig. 2.



Witnesses
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HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 308,428, dated November 25, 1884.

Application filed February 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. OLDERSHAW, a resident of Baltimore city, Maryland, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a specification, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a transverse horizontal section taken on the line *xx* of Fig. 2, and Fig. 2 is a vertical section taken on the line *xx* of Fig. 1.

Like letters of reference mark the same parts in all the figures.

My invention relates to hot-air furnaces, and has for its object to increase the heating capacity by furnishing an increased supply of hot air with a less consumption of fuel than has been heretofore possible; and to that end my invention consists in the combination, arrangement, and construction of parts, which will now be described, and afterward specifically pointed out in the claims.

Referring to the drawings by letter, A is the jacket which surrounds the furnace. B is the ash pit or box, having door *b*, and to which the legs or supports *b'* are attached. C is the fire-box, which is provided with an opening, *c*, to receive the fuel, closed by a door, *c'*, and having a grate, *c''*. The sides of the fire-box are surmounted by a concentric ring, forming laterally-extending flanges *d*, upon which, at their outer edges, is mounted a cylinder, *d'*, extending to near the top of the jacket. Another concentric ring, *d''*, surmounts the cylinder *d'*, reaching inward, and from whose inner edge projects a cylinder, *d'''*, which reaches down to within a short distance of the ring-flange *d*, and has its bottom closed by a plate, E, which is sufficiently large in diameter to fill the outer cylinder, *d'*, and forms the top of the fire-box. This plate E is cut away at *e*, for a purpose hereinafter explained. Any desired number of pipes or flues, F, reach from the interior of cylinder *d'''* to the exterior of the jacket, and a flue, G, extends from the interior of cylinder *d'* to the exterior of the jacket on the side opposite to the supply-door *c'* of the fire-box.

All the parts hereinbefore described may be made of any material suited to the purpose, and may be cast or otherwise made in as many pieces as may be desirable or convenient,

which may be secured together in any well-known manner. When in position, as described, and fire being kindled in the fire-box, the products of combustion will pass upward out of the fire-box through the opening *e* into the concentric smoke-box H H', thence around in either or both directions from H to H', and through the flue or pipe G. The heat of the fire-box and smoke-box will create an upward draft in the space I between these parts and the jacket, which will tend to compress the air in the top of the jacket, as at J. The interior space, K, surrounded by the smoke-box, being also occupied by air, that portion of the air at the bottom thereof, being in contact with the intensely-heated top E of the fire-box, will be expanded in all directions, and as in any attempt to expand upwardly it will meet with the resistance of the compacted body of air at J, it will rush out through the hot-air flues or pipes F, to be distributed as desired. The air which is thus distributed will, in its passage over the course marked by the arrows *i*, become doubly heated, being first heated by contact with the sides of the fire-box and smoke-box, and then carried down, and before delivery to the flues be still more heated by contact with cylinder *d'''* and plate E on top of the fire-box. The passage of the heated air through the flues F will heat them, and thus give still more heated surface in the space I in the jacket. The smoke-flue also aids in this effect. By this arrangement it is impossible to deliver cold air through the air-flues while any of the parts are heated, and a much greater supply of heated air is furnished than is possible with that class of furnaces, so commonly used, in which the air passes simply through the space I and is delivered through air-flues at the top of the jacket.

The improvements herein described are equally applicable to stoves.

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

1. A hot-air furnace having a fire-box, a concentric smoke-box surmounting the same and encircling a chamber, K, from which the air-flues diverge, and a jacket surrounding the same, having no opening except at the bottom, whereby the air received through the opening at the bottom of the jacket is carried

upward between the jacket and fire and smoke boxes, thence downward through said chamber K, and finally out through the flues, as set forth.

5 2. The combination, substantially as described, of the fire-box, the concentric smoke-box surmounting the same, forming the chamber K, the jacket surrounding these parts, forming the chamber or space I, the air-flues
10 diverging from chamber K, and passing

through the smoke-box and space I, and the smoke-flue leading from the smoke-box through said space, as set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

JOHN B. OLDERSHAW.

Witnesses:

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