

(No Model.)

2 Sheets—Sheet 1.

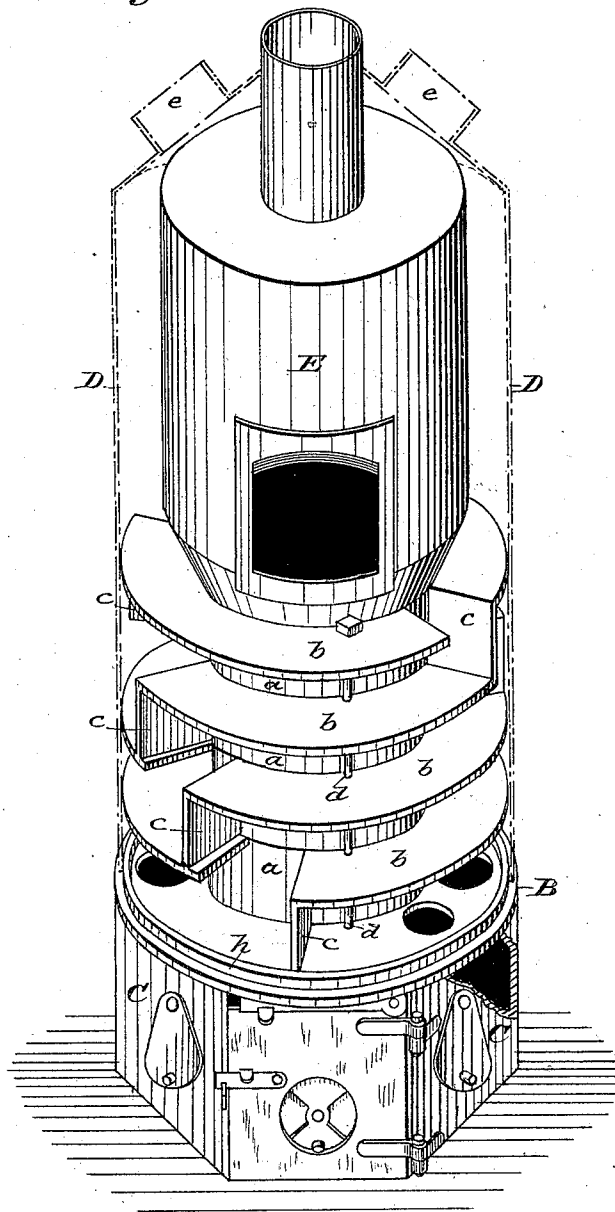
D. McCREARY RUSSELL.

HOT AIR FURNACE.

No. 309,495.

Patented Dec. 16, 1884.

Fig. 1.



Witnesses:

J. C. Brecht
David H. Mead

Inventor:

David McCreary Russell

By J. M. Crutcher
Attorney.

(No Model.)

2 Sheets—Sheet 2.

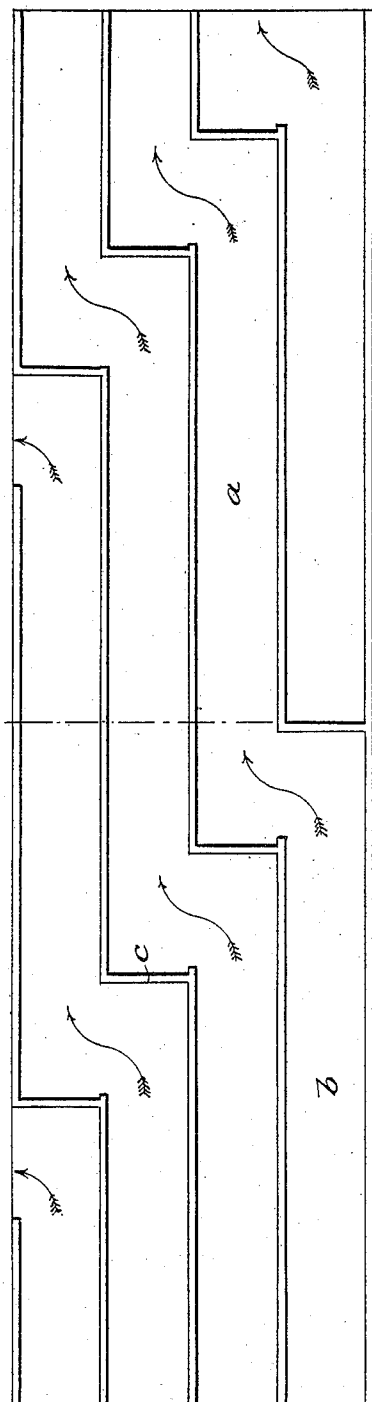
D. McCREARY RUSSELL.

HOT AIR FURNACE.

No. 309,495.

Patented Dec. 16, 1884.

Fig. 2.



Witnesses:

T. C. Brecht

David or mead

Inventor:

David M. Russell

By J. M. C. W. L. L. L.

Attorney.

UNITED STATES PATENT OFFICE.

DAVID MCCREARY RUSSELL, OF WASHINGTON, DISTRICT OF COLUMBIA.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 309,495, dated December 16, 1884.

Application filed October 25, 1883. (No model.)

To all whom it may concern:

Be it known that I, DAVID MCCREARY RUSSELL, a citizen of the United States, residing at Washington, District of Columbia, have invented new and useful Improvements in Hot-Air Furnaces, of which the following is a specification.

My invention relates to an improvement in hot-air furnaces, and has for its object to simplify and cheapen the construction of such apparatus, and render it effective in the highest degree by causing the air to be heated to come in direct contact with the greatest possible heating-surface.

My invention consists, primarily, of a combustion-chamber made in cylindrical sections adapted to be placed one upon the other, each of said sections having formed therewith flanges, the peculiar shape of which flanges adapts them, when the parts are in place, to form two continuous flues for conducting the air in the process of heating, and in various details of construction, all as will be hereinafter fully set forth and distinctly claimed.

Figure 1 is a perspective view of the invention with the outer casing shown in dotted lines, and Fig. 2 is a view of the circumference of the fire-pot spread on a horizontal plane.

In the drawings, A represents the combustion-chamber, which is made up of the cylindrical portions *a*, all of which are cast with radial flanges *b* flush with their top. Each of these flanges extends circumferentially about three-eighths of the circumference of the combustion-chamber, and laterally to the inner face of the outer casing, which is made of a size to insure a tight joint at this point. Thus it will be seen that when the sections are in place there will be a series of annular passages extending around the combustion-chamber. In order to connect these passages and form a continuously-ascending flue, I cast integrally with each section a downward continuation, *c*, of the flange *b* sufficiently long to rest on the top and near the end of the flange of the next lower section, so that a passage around any given section is connected to the passage next above by the projection *c* of the next section above resting on and forming a

tight joint with one end of one of its flanges, while the downwardly-projecting end of the opposite fellow flange joins with the end of a flange of the next lower section, and so on. Similar connections are made on the opposite side, thus forming two continuous conduits for conveying air from the point of influx to the point of discharge. The pieces *c* are shown as perpendicular, but they may be made slanting or curved, so as to allow the air to pass through the flues with less friction at the upward turns. The base of the furnace is formed of the double-walled portions C and the plate B. The portions C have secured to them the grate and form the ash-pit. Between their double walls are left sufficient spaces to form passages for conducting atmospheric air to the heating-flue. The plate B forms the top of these passages, and is provided with a suitable number of openings to insure the free passage of the air. This plate also forms the base for the support of the sections forming the combustion-chamber, and has a flange for the support of the outer casing, D, which is secured on by riveting to the upturned rib *h*. The different sections *a* are secured in place by headed screw-bolts *d*, a suitable number of which are passed down through previously-prepared holes in the flanges, and their threaded ends take into internally-screw-threaded openings in the plate B. The joints between the different sections of the combustion-chamber are rendered tight by cement by interlocking edges or the like.

In order to most advantageously utilize the heat of the lost products of combustion emanating from the burning coal, I form the upper portion, E, of the combustion-chamber of comparatively thin material, preferably sheet metal, so that the heat of the smoke, gases, &c., is easily radiated to heat the air in its passage to the discharge-openings *e*, which are provided in the outer casing. This drum has an opening for the reception of coal, closed by a door (not shown) hung on the casing.

The advantages of my invention will be readily appreciated by those skilled in the art, particularly in relation to the combustion-chamber, for by casting it in sections I avoid the great difficulty usually attending the cast-

ing of so large a body as a complete combustion-chamber intact with a spiral flange, as has heretofore been done.

Having thus described my invention, what I claim is—

1. In a hot-air furnace, a fire-chamber composed of cylindrical sections, each section having two integral horizontal radial flanges in the same horizontal plane with a space between their contiguous ends for the passage of air, and also having vertical flanges adapted to bear on the horizontal flanges of adjacent sections, and forming conduits for the air, substantially as and for the purposes set forth.

2. In a hot-air furnace, the combustion-

chamber composed of a series of sections, *a*, having formed integral therewith horizontal and vertical flanges *b* *c*, and gaps or spaces in the horizontal flanges *b* at the point of juncture with the vertical flanges *c*, in combination with a cylindrical outer casing, *D*, whereby a series of heating-flues are formed, substantially as and for the purpose set forth.

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

DAVID MCCREARY RUSSELL.

Witnesses:

C. S. DRURY,
WM. O'BRIEN.