

No. 613,216.

Patented Oct. 25, 1898.

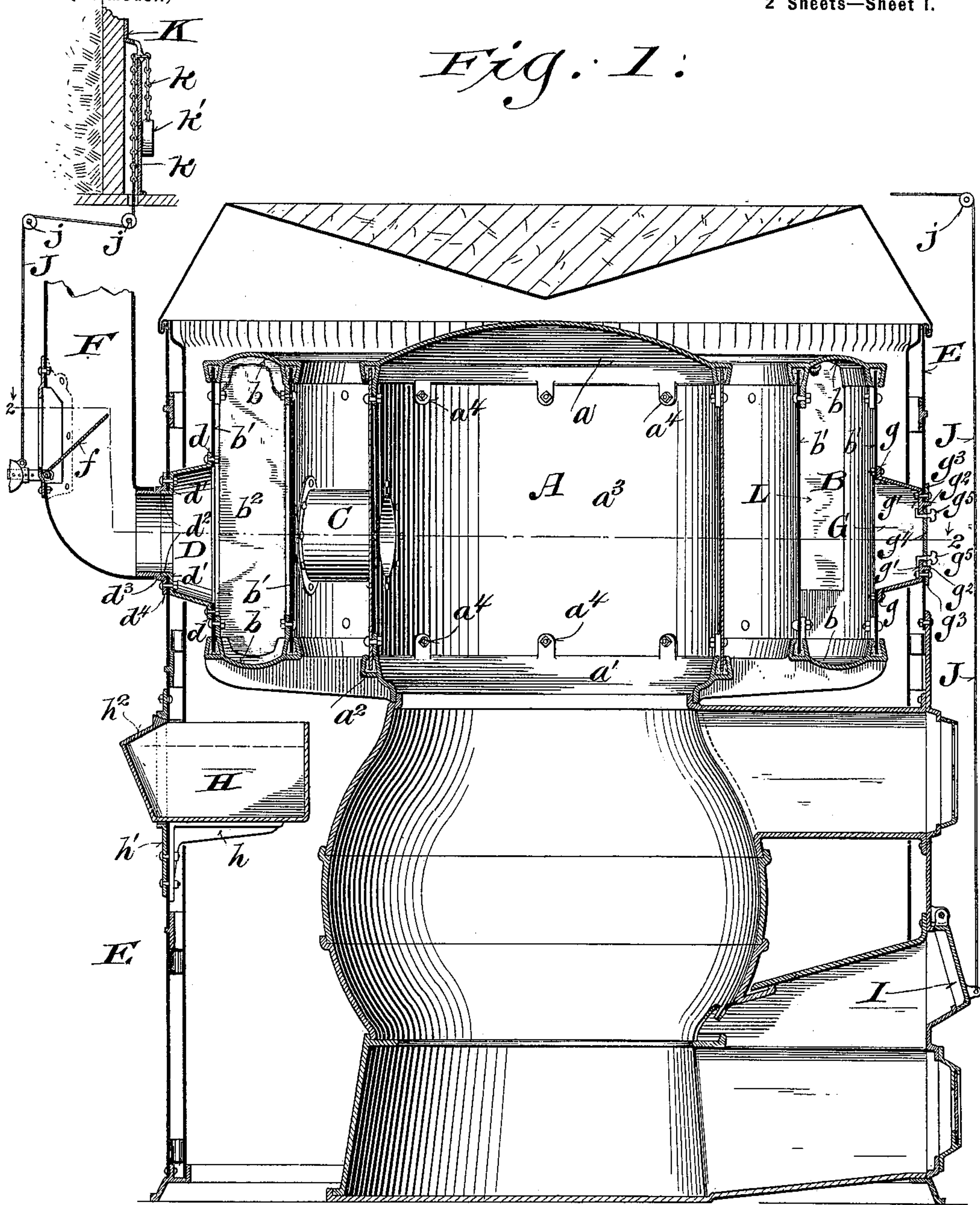
R. J. SCHWAB.
FURNACE.

(Application filed Nov. 2, 1893. Renewed Apr. 2, 1898.)

2 Sheets—Sheet 1.

(No Model.)

Fig. 1:



Witnesses:
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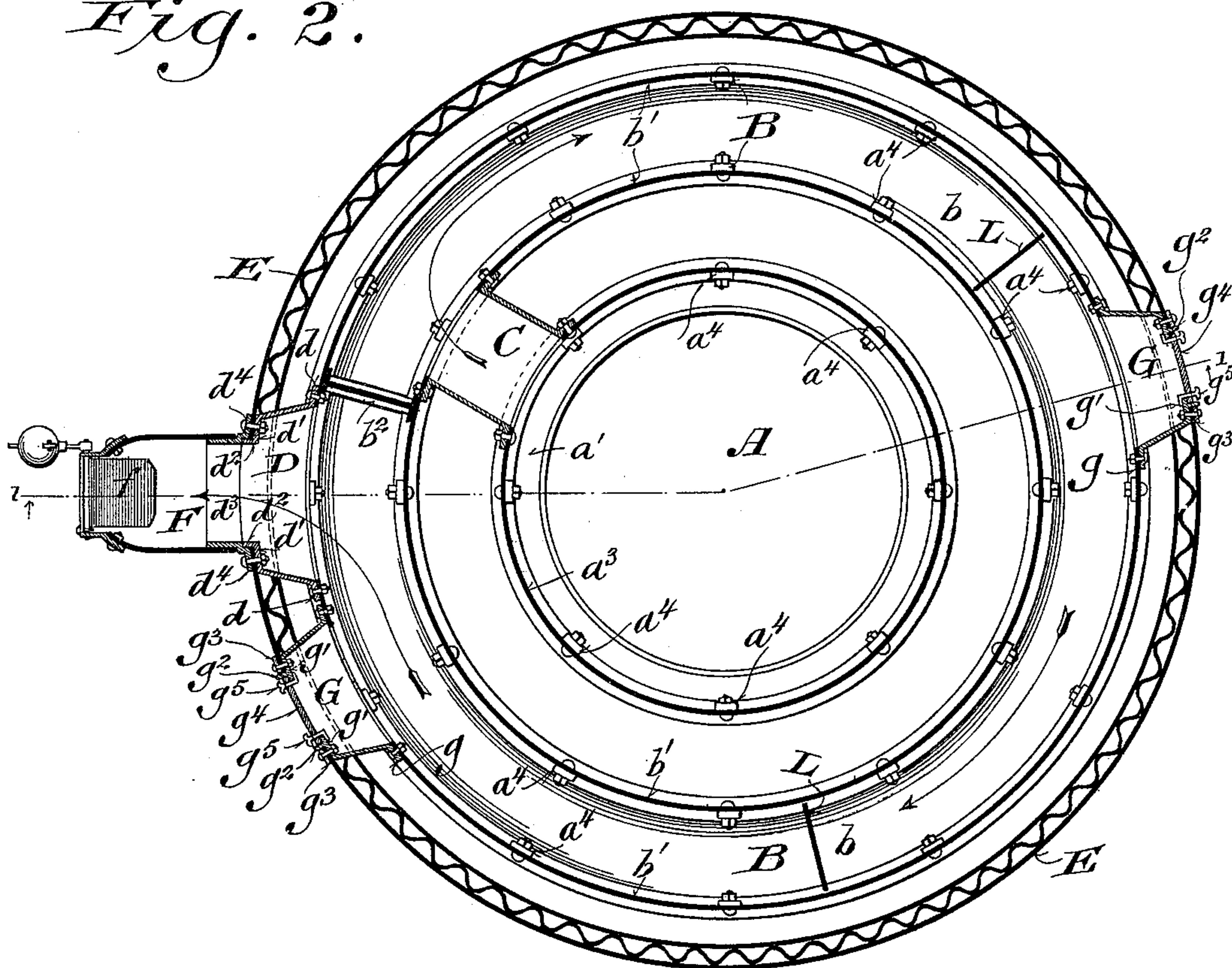
R. J. SCHWAB.
FURNACE.

(No Model.)

(Application filed Nov. 2, 1893. Renewed Apr. 2, 1898.)

2 Sheets—Sheet 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

RUDOLPH J. SCHWAB, OF MILWAUKEE, WISCONSIN.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 613,216, dated October 25, 1898.

Application filed November 2, 1893. Renewed April 2, 1898. Serial No. 676,254. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH J. SCHWAB, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main objects of my invention are to insure tight joints, and thus prevent the escape of gas into the room or apartments heated by the furnace, and generally to improve the construction and operation of hot-air furnaces of the class to which my invention relates.

It consists of certain novel features in the construction and arrangement of parts, as hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in both figures.

Figure 1 is a vertical section of a furnace embodying my improvements on the line 1 1, Fig. 2; and Fig. 2 is a horizontal section of the same on the line 2 2, Fig. 1.

A represents the dome, and B an annular heating-drum or radiator surrounding the dome and connected therewith on one side adjacent to the smoke-flue by a pipe or flue C. The dome consists of cast-iron top and bottom sections $a a'$, which are formed with annular packing-recesses a^2 for the reception of the edges of the side section or cylindrical portion a^3 of the dome, which is preferably made of sheet iron or steel. The cast top and bottom sections of the dome are formed at intervals with perforated ears $a^4 a^4$, to which the sheet-metal side section a^3 is bolted or riveted a short distance from the packing-recesses. These recesses are filled with asbestos cement or other suitable packing material. The heating-drum or radiator B is similarly constructed of cast top and bottom sections $b b$ and sheet-metal side sections $b' b'$, connected with each other by joints like or similar to those just described.

I make no claim herein to the construction of the packing-joint shown in connection

with my other improvements, but make that the subject-matter of another application.

The drum B is provided with a smoke-flue connection D, which consists of an annular casting formed with an outwardly-projecting flange d , by which it is bolted or riveted to the drum, around an opening therein, and at the opposite end with an inwardly-projecting flange d' , which constitutes a seat for the outer wall of the casing E, around an opening therein, and has at its inner edge an outwardly-projecting rim d^2 , and of a collar d^3 , formed with an offset to fit over the rim d^2 and with an outwardly-projecting flange d^4 , adapted to be bolted or riveted over the outer wall of the casing to the flange d' . The smoke-pipe F is fitted over and attached to the collar d^3 in the usual manner. By means of this construction of the smoke-flue connection a firm tight joint is produced between it and the casing, and the rim d^2 , being formed integrally with the casting D and extending outside of the outer wall of the casing, avoids the possibility of gas escaping from the smoke-flue connection into the space between the casing and the drum. Between the flues C and D the drum B is provided with a partition b^2 , which compels the draft to make the entire circuit thereof to reach the smoke-flue.

For the purpose of removing soot and ashes I provide the drum B, preferably on opposite sides of the furnace, with one or more clean-out connections G G, each of which consists of an annular or sleeve-shaped casting similar to the smoke-flue connection and formed at one end with an outwardly-projecting flange g , by which it is bolted or riveted to the outer wall of said drum, around an opening therein, and at the opposite end with an inwardly-projecting flange g' , which affords a seat for the outer section of the casing E, around an opening therein, and has an outwardly-projecting rim g^2 a short distance from its inner edge, of a frame g^3 , which is bolted or riveted over the casing to the flange g' , and of a door-plate or cover g^4 , fitted inside of the rim g^2 to the inwardly-projecting edge of the flange g' , to which it is secured by thumb-catches g^5 . These clean-out connections afford convenient means of ready access to the interior of the drum, and the construction described produces a substan-

tial gas-tight joint between the castings G and the outer section of the casing. The rim g^2 , formed integrally with said castings and projecting outside of the casing, absolutely prevents any gas escaping from the interior of the clean-out connections into the space between the drum and casing.

To prevent the draft and heated products of combustion which it carries from uninterruptedly traversing the upper to the exclusion of the lower part of the drum or radiator B, particularly in furnaces of the larger sizes, I provide one or more deflecting-plates L L, placed at suitable intervals between the inlet and outlet flues C and D, inside of said drum and extending from the top to a point near the bottom thereof. By this means the heated currents are compelled in their passage to the smoke-flue to descend one or more times to the lower part of the drum, and thus distribute their heat more evenly through it.

I claim—

1. In a furnace, the combination with a heating-drum or radiator and a sheet-metal casing, of a smoke-flue or clean-out connection consisting of a sleeve-shaped casting formed at one end with a flange which is bolted or riveted to said drum or radiator around an opening therein, and at the other end with a flange to which the casing is secured having a rim on its outer face projecting outside of the casing around an opening therein, substantially as and for the purposes set forth.

2. In a furnace, the combination with a heating-drum or radiator and a sheet-metal casing surrounding the same, of a smoke-flue

connection consisting of a sleeve-shaped casting formed at one end with a flange which is bolted or riveted to said drum or radiator around an opening therein, and at the other end with a flange which is secured to the casing around an opening therein and has a rim on its outer face projecting beyond the edge of said opening, and of a collar fitting over said rim and having a flange which is bolted or riveted to that on which said rim is formed, substantially as and for the purposes set forth.

3. In a furnace, the combination with a heating-drum or radiator and a sheet-metal casing, of a clean-out connection consisting of a sleeve-shaped casting formed at one end with a flange which is bolted or riveted to said drum or radiator around an opening therein, and at the other end with a flange which is secured to the casing around an opening therein, and has an outwardly-projecting rim formed on its outer face, a frame bolted or riveted over said casing around said rim to the flange on which it is formed and a door or cover fitted inside of said rim to the inwardly-projecting edge of said flange, and provided with suitable fastenings for securing it thereto, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

RUDOLPH J. SCHWAB.

Witnesses:

A. W. EMERY,
CHAS. L. GOSS.