R. F. BROWN.

HOT AIR FURNACES.

No. 184,829. Patented Nov. 28, 1876.

Fig: 1.

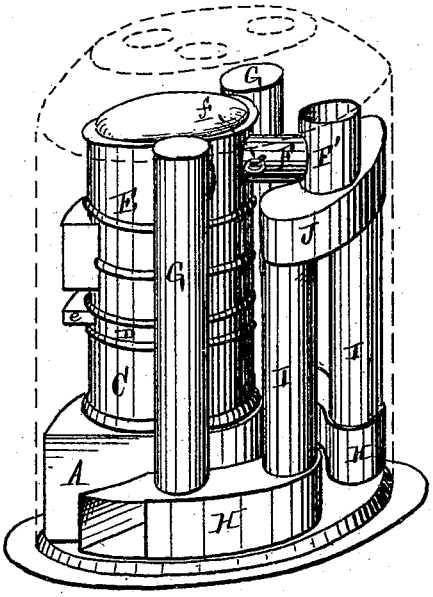


Fig: 2.

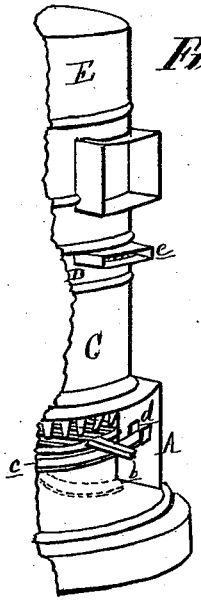


Fig: 3.

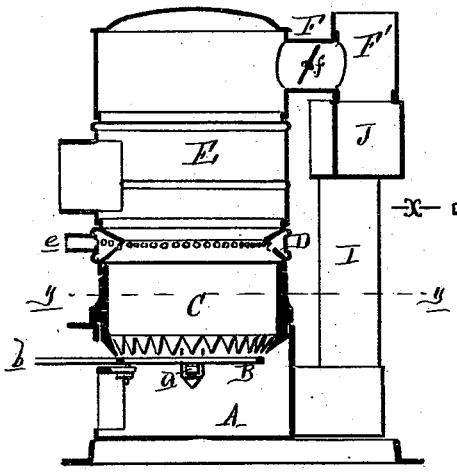
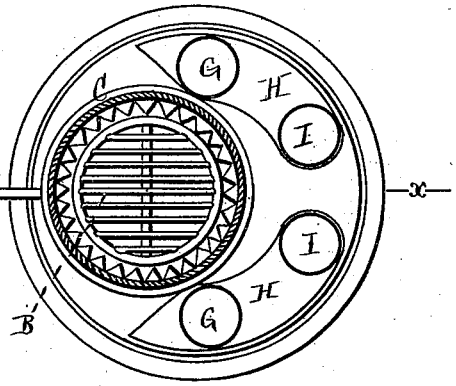


Fig: 4.



Witnesses

C. R. Hulett

Edward Barthel

R. F. Brown Inventor

By

Prof. S. Sprague. Attorneys

UNITED STATES PATENT OFFICE.

ROYAL F. BROWN, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **184,829**, dated November 28, 1876; application filed July 1, 1876.

To all whom it may concern:

Be it known that I, ROYAL F. BROWN, of Chicago, in the county of Cook and State of Illinois, have invented an Improvement in Hot-Air Furnaces, of which the following is a specification:

The nature of my invention relates to an improvement in surface-burning air-heating furnaces of that class wherein the gaseous products of combustion are conducted by diving-flues into base-flues, thence by ascending flues into the direct flue, into which the gases may be allowed to pass directly, if desired; and it consists in the peculiar construction and combination of the several parts, as more fully hereinafter set forth.

Figure 1 is a perspective view of the furnace with the casing removed. Fig. 2 is a partial front perspective view, showing the manner of supporting the grate-lever. Fig. 3 is a vertical section at *x x* in Fig. 4, which is a horizontal section at *y y*.

In the drawing, A represents the ash-pit, having a circular opening in the top, in which is hung a rotary grate, B, on a trunnion-bar, *a*. The grate is cast with a stationary lever, *b*, projecting to the front, which lever is supported by a segment-shaped bar, *c*, hinged at one end to the side wall of the ash-pit, while the other end is received in, and supported by, a socket-bracket, *d*, cast on the other side wall. When it is desired to tilt or dump the grate the bar *c* is swung out to one side, when the bar *b* may be lowered. C is the fire-pot, surmounted by a hollow combustion-ring, D, triangular in cross-section, and perforated just under the inner angle, as shown. The air to promote the combustion of the gases enters the ring through a throat, *e*, which may be fitted with the usual register. E is the combustion-chamber, mounted on the ring D, and is fitted with the usual feed-door in front and exit-flue F at the back, in which there is hung a damper, *f*. Two short lateral flues at the top of the combustion-chamber convey the gases into diving-flues G G, one at each side, which deliver the gases into the front end of a segment-shaped base-flue, H, at the rear end of which rises an ascending flue, I, which conveys the gases into a cross-flue, J, at the back of the furnace, and from which rises the main exit-flue F′, which is intersected by the direct-draft flue F. When the damper in the latter is closed the heated gases pass down the diving-flues into the base-flues. Passing through these they rise through the ascending flues into the cross-flue before finding an exit at a greatly-reduced temperature, owing to the large area of radiating-surface which they have traversed.

What I claim as my invention is—

In an air-heating furnace, substantially as described, the combination of the diving and ascending flues and base and cross flues with the ash-pit, grate, fire-pot, combustion-ring, and combustion-chamber, substantially as set forth.

ROYAL F. BROWN.

Witnesses:

WM. H. LOTZ,

EMIL H. FROMMANN.