

W. H. LOTZ.
HOT-AIR FURNACES.

No. 177,857.

Patented May 23, 1876.

Fig. 2.

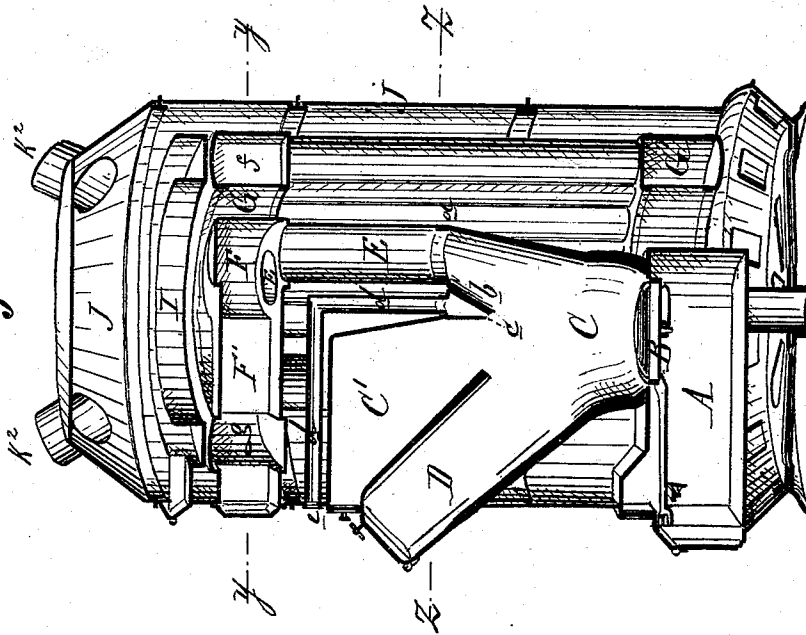
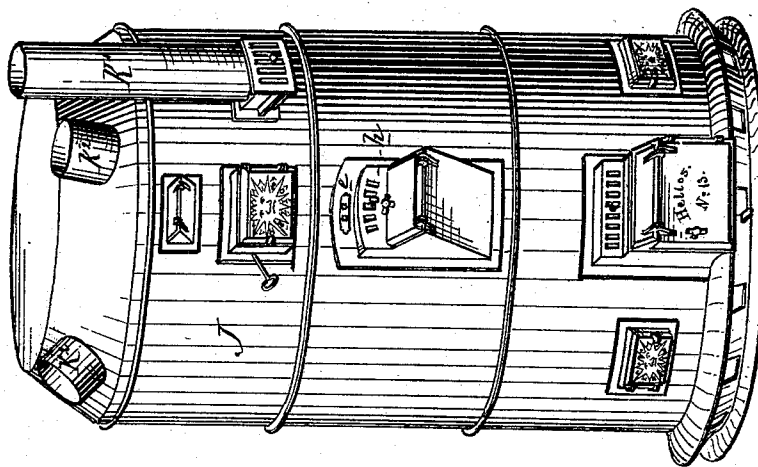


Fig. 1.



Attest
Edward Barthel.
Wm. H. Lotz.

Inventor.
Wm. H. Lotz.
By Atty.
Pho. S. Sprague

W. H. LOTZ.
HOT-AIR FURNACES.

No. 177,857.

Patented May 23, 1876.

Fig: 3

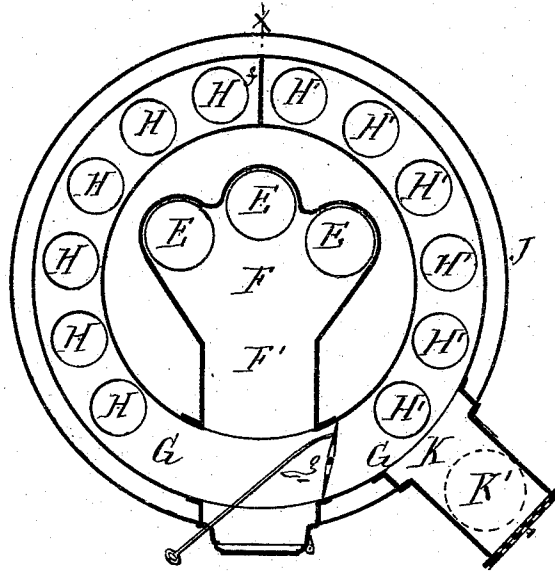
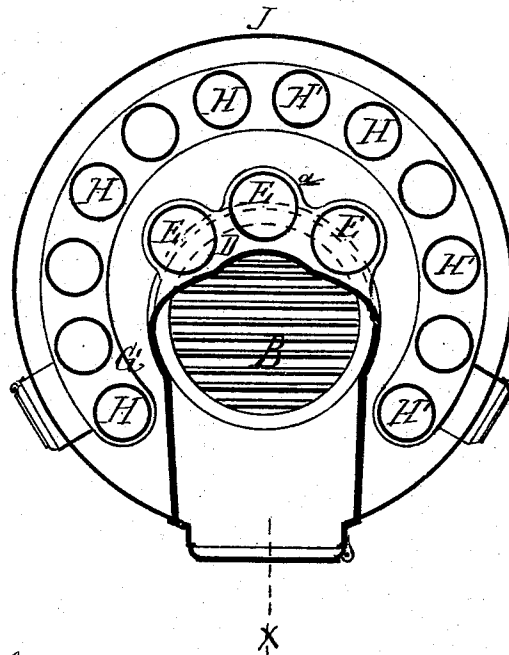


Fig: 4.



Attest,
Edward Barthel
W. P. Holding

Inventor.
W. H. Lotz
By atty
W. S. Sprague

UNITED STATES PATENT OFFICE.

WILLIAM H. LOTZ, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **177,857**, dated May 23, 1876; application filed July 9, 1875.

To all whom it may concern:

Be it known that I, WILLIAM H. LOTZ, 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 certain improvements in the air-heating furnace for which Letters Patent were issued to me August 11, 1874; and on October 27, 1874, for an improvement thereon; and has for its object to secure a more perfect combustion of the gases, through the means more fully hereinafter set forth and claimed.

Figure 1, Sheet 1, is a perspective view of my improved portable furnace. Fig. 2 is a vertical section at *x x*. Fig. 3, Sheet 2, is a horizontal section at *y y* in Fig. 2. Fig. 4 is a similar section at *z z* in the same figure.

In the drawing, A represents the ash-pit, having a circular opening in its top plate, in which is hung a grate, B. A fire-pot, C, rests upon the ash-pit, and incloses the grate-opening. The back part of the fire-pot is higher than the front, and is covered by a flat plate, *a*, whose shape is that of an irregular segment, in front of which there is a combustion-chamber, C', into the lower front part of which is carried an inclined fuel-chute, D, whose lower wall forms a prolongation of the front of the fire-pot. The upper end of the chute extends through the casing J, and is provided with a fuel-door. Between the inner edge of the plate *a* and the back wall of the combustion-chamber there is a pendent hollow bridge-wall, *b*, extending transversely across the combustion-chamber, with a narrow slit, *c*, along its lower edge for the delivery of air, which is carried to it by a bent pipe, *d*, extending up the back and over the top of the combustion-chamber, and through the casing, the volume of air admitted being regulated by a register, *e*. From the plate *a* three flues, E, rise into a horizontal flue-chamber, F, connected at the front by a passage, F', with an outer annular flue-chamber, G, at one side of which there is an exit-flue, K, carried out through the casing to a smoke-pipe, K'. G' is a segmental flue-chamber, which nearly surrounds the ash-pit. The annular flue G is divided into two parts by a partition, *f*, at the

back. Access is had to the front part by a door, at one side of which is a revertible draft-damper, *g*, which closes the said flue to the passage of the gases of combustion to the exit-flue, in which case they are compelled to pass into the left side of said flue G, thence down into the segment G', through six drop-flues, H; thence up through six ascending flues, H', to the right side of the flue G before finding an exit therefrom. Access is had to the flue G' through doors and passages through the casing, to remove accumulations of dust deposited therein. I is an annular evaporating-pan, supported by short legs above the annular flue G. J is the casing of the furnace, and K² are the hot-air flues issuing from its top.

The fuel-chute is inclined at the angle at which coal will fall from a pile, and serves as a magazine, in which the fuel is coked and caused to yield up its gases, which naturally rise and expand into the large combustion-chamber C', at the top of which there is a register, *h*, for admitting atmospheric air to mingle with them in the proper proportion to prepare them for ignition. The draft of the furnace is at the back part of the fire-pot, owing to the lesser depth of coal there, and the mixed air and gases are drawn back under the bridge-wall, where a thin stream of highly-heated air mingles with them at the proper temperature to ignite them, the ignition being secured by their passing over the incandescent fuel, in close proximity to its upper surface; so that clear flame alone will be found back of the bridge-wall, proof of which is found in the fact that bituminous coals of the poorest quality have been continuously consumed in such furnaces without giving off smoke.

What I claim as my invention is—

1. In an air-heating furnace, and in combination, the hollow bridge-wall across the back part of the fire-pot, and within the same, and having a narrow slit across its lower end, and an air-tube, having a register at its outer end, said tube passing over and behind the combustion-chamber, and its inner end terminating directly over the slit aforesaid, substantially as and for the purposes set forth.

2. In an air-heating furnace, the combina-

tion of the following elements, viz: a fire-pot, having an elevated combustion-chamber directly above and connected with it, and closed at the top; an inclined magazine-chute, adapted to deliver fuel to the front of the fire-pot; a hollow transverse bridge-wall, adapted to deliver a thin stream of hot air into the fire-pot back of the inner mouth of the magazine-chute; a tube with a register for admitting hot air to the gases of combustion before passing under the bridge-wall; and flues at the back of the fire-pot for carrying off the products of combustion, substantially as described.

3. In an air-heating furnace, the combination of the annular flue G, having the partition *f* and revertible damper *g*, the segment-

flue G', the diving and ascending flues H H', and the flues E, F, and F', and the fire-pot C, substantially as and for the purposes set forth.

4. In an air-heating furnace, in combination, the pendent bridge-wall within the fire-pot and across the same, the combustion-chamber, and the eduction-flues, for the purpose of interposing said bridge-wall and the current of hot air passing through it between the opening into the combustion-chamber and the opening into the eduction-flues, substantially as described and shown.

WILLIAM H. LOTZ.

Witnesses:

GEO. FROMMANN,
CARL MEYER.