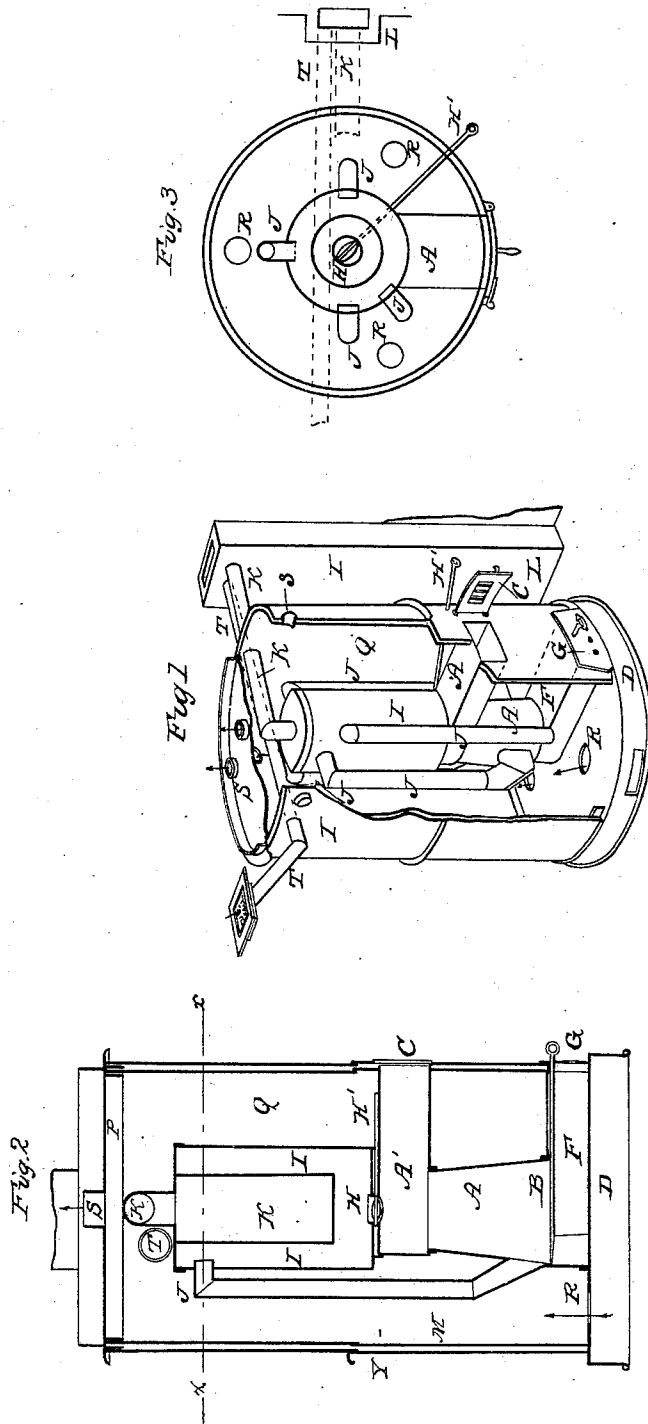


P. LOW.
Furnace.

No. 27,724.

Patented April 3, 1860.



UNITED STATES PATENT OFFICE.

PETER LOW, OF CINCINNATI, OHIO.

FURNACE.

Specification of Letters Patent No. 27,724, dated April 3, 1860.

To all whom it may concern:

Be it known that I, PETER LOW, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Furnaces; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, made to form a part of this specification.

The nature of my invention relates to the arrangement of pipes and flues, and the combination of parts in furnaces, stoves, &c., substantially as hereinafter represented and described.

With reference to the accompanying drawings, Figure 1, is a sectional view in perspective of my improved furnace. Fig. 2, is a sectional elevation, the sectional plane passing through the center of the furnace, fire-door, &c. Fig. 3, is a sectional plan the plane of section being taken as X.

A, is the fire-pot constructed in the form of the hollow frustum of a cone inverted.

B is the grate, and C, the fire-door furnished with a suitable register or apertures, to supply the air required to support combustion.

D, is the base of the furnace, which forms a receiving chamber for cold air either through suitable conducting pipes or directly, from the apartment in which the furnace is located.

F, is the ash-pit, and G, a door to the same, in which are apertures to admit air while the fire is being kindled, only, after the fire is well burning they are closed. Immediately above the fire-pot A, is the gas-chamber A', which is closed at the top, or opened to produce a direct draft for kindling the fire, by means of the valve H, which can be operated by means of rod H', which protrudes for the purpose. Just over the chamber A', is arranged the central flue-chamber I, into the upper part of which lead the several flues J, from the lowest part of the fire-pot A, close to the top of the grate B. The flue chamber I is provided with an inner cylinder K' secured to the upper portion of the flue chamber I, an opening being formed in its middle for the reception of the end of the flue pipe K, which forming an angle leads through the side of the furnace to any suitable chimney L.

The fire-pot, chamber A', and flues J, are all inclosed in a casing M, which with the base D, and top-plate P, form the air heating chamber Q, into which the cold air is admitted through the apertures R, in the base D. In this chamber Q, the air is exposed to the heated, and radiating surfaces of fire-pot A, chamber A', pipes or flues J, and the central flue chamber I, and thereby becomes properly heated and is passed off, by its own tendency to rise and give place to the cold air, through the orifices S, into the apartment, or through suitable conducting pipes to suitable registers in other apartments above which it may be required to supply with warm air.

T, is a pipe leading from the bottom, at or near the floor, of rooms or apartments to be warmed, and leading through chamber Q, and in close contiguity to the pipe K, conducts away the cold or cool and vitiated air of such apartments. Such air being heavier than the warm fresh air supplied as described, naturally flows down this pipe until on its way it becomes warmed by passing through chamber Q, and by its proximity to pipe K, when its tendency to rise passes it rapidly off into and up the chimney L, and thus an efficient and healthful ventilation is secured at the same time, and by the same means in the main, that the heating of the apartments is effected, the waste heat from pipe K, being in a measure utilized in aiding to produce the current in pipe T, to carry off the cool and vitiated air.

An important advantage is secured by connecting the flue pipes J, to the fire-pot close to its bottom, and the surface of the grate, over the common method of arranging similar flues intermediately between such a position and the top of the fire-pot. By my arrangement the necessary air to produce complete combustion is made to pass down so low as to produce complete combustion of the coal to the surface of the grate, and serves a very beneficial purpose by sifting the ashes down through the grate so as not to remain among the lower portion, of partly consumed coal and prevent its perfect combustion, as is the case where such flue pipes connect with the fire-pot at any point above the surface of the grate. At the same time I secure the advantage of consuming very perfectly, all the combusti-

ble gases, and as effectually and even more so than in the case of those furnaces where such flue pipes are connected intermediately between the top of the fire-pot and its bottom.

5 The form of the fire-pot which is made larger at the bottom than the top, is peculiarly advantageous in connection with the described arrangement of pipes, as the ashes
10 are thereby the more freely sifted down by the draft or current of air and gases, and so less obstruction is presented to the said current. The described form of fire-pot also has the advantage of permitting the employment
15 of a large grate and thereby the downward passage of cinders ashes &c. is facilitated when it is required to clear out the fire-pot. The grate B, is pivoted and operated by means of rod U. An exterior
20 casing Y, inclosing the other, M, forms a confined-air nonconducting space between them to reduce or prevent the loss of heat by radiation. I am aware that draft pipes have been arranged to communicate with
25 the fire-pot at a point somewhat below its top. I therefore do not wish to be understood as claiming any arrangement of said

draft pipes irrespective of their point of communication with the fire-pot.

But what I do claim as new, and desire to secure by Letters Patent is—

1. In combination with the air heating chamber Q, I claim the fire pot A, flues J, gas chamber I, cylinder K' and smoke pipe K, the whole being constructed and arranged
35 in relation to each other substantially as set forth.

2. I claim the arrangement of the ventilating pipe, T, gas chamber, I, and smoke pipe, K,—said ventilating pipe T which leads
40 from the floor of the apartments to be ventilated, being made to pass through the inner space Q of the furnace above the gas chamber I and alongside and in close proximity to the smoke pipe K, and thence into
45 the chimney, for the purpose of carrying off the vitiated air from the apartments as specified.

In testimony of which invention I have hereunto set my hand.

PETER LOW.

Witnesses:

H. E. CLIFTON,
D. N. B. COFFIN, Jr.