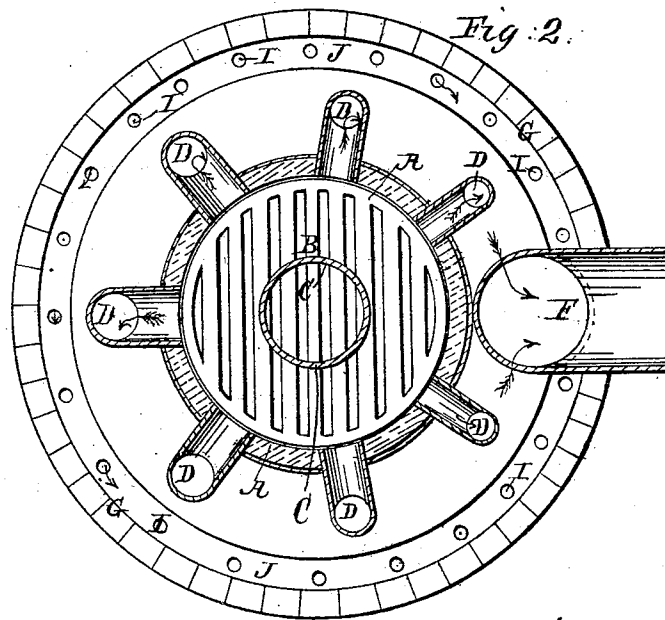
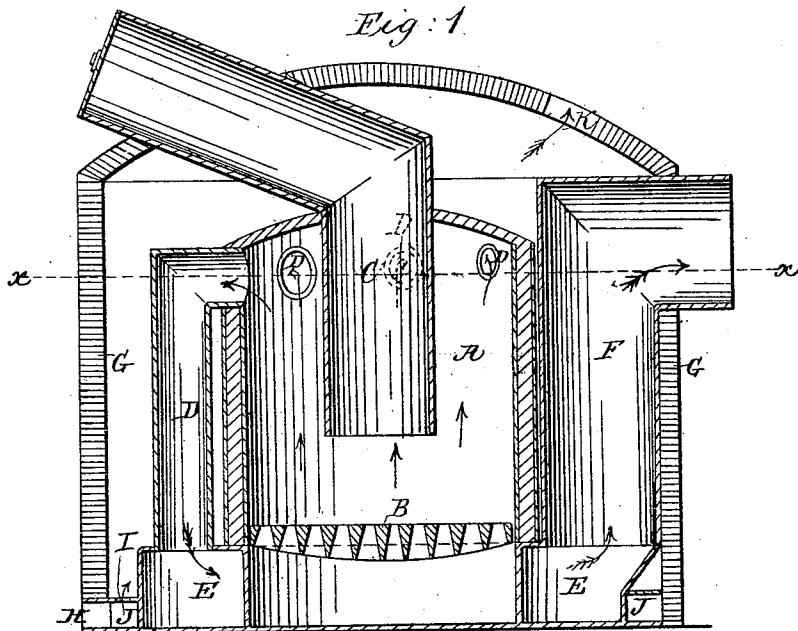


J. G. PORTER.
Magazine Hot-Air Furnace.

No. 101,911.

Patented April 12, 1870.



Witnesses

Chas. Thayer
R. H. Kabeau

Inventor.

John G. Porter

United States Patent Office.

JOHN G. PORTER, OF NEW YORK, N. Y.

Letters Patent No. 101,911, dated April 12, 1870.

BASE-BURNING HOT-AIR FURNACE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, JOHN G. PORTER, of the city, county, and State of New York, have invented certain new and useful Improvements in Hot-air Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a central vertical section of a furnace, with my improvements.

Figure 2 is a horizontal section of the same in the plane indicated by the line xx in fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists, first, in a novel arrangement of the flues through which the smoke and gases pass from the fire-chamber of the furnace to the chimney, whereby a very effective heating-surface and a uniform draught all round the fire are obtained.

And it consists, secondly, in a novel arrangement of an air-distributor, for distributing the air to be heated for warming a building or apartment.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the accompanying drawings.

A is the fire-chamber, of circular or other form, made of cast-iron or of sheet-iron lined with fire-brick, or in any other suitable manner, having a grate, B, and fed through a central magazine, C, to operate on the "base-burning" principle or through a door in the one side.

From the upper part of this fire-chamber there branch off drop-flues, D D, of cast or sheet-iron or other material, which extend out radially for a short distance, and then descend to an annular flue, E, which surrounds the lower part of the fire-chamber or ash-pit.

From this annular flue E rises, on one side of the fire-chamber, the smoke-pipe F, which may extend right through the top of the air-casing G, or may turn off with an elbow through the side thereof, as shown in the drawings. This smoke-pipe leads to the chimney.

The flues D D are of varying size, according to their distance from the smoke-pipe; those nearest the smoke-pipe being the smallest, and the others of gradually increased size, according to their distance from the smoke-pipe F.

By this means the draught is uniform all round the fire-chamber, instead of more-intense near the smoke-

pipe F, as it would be if the flues D D were of uniform size.

The air-casing G, built of brick-work or other material, surrounds the fire-chamber and flues at a suitable distance outside of the drop flues D D and lower annular flue E, and covers the top thereof.

At the bottom of this casing is the annular air-distributor J, surrounding the annular smoke-flue E.

This air-distributor may be cast with the annular smoke-flue or otherwise constructed.

It has an air-duct, H, or may have more than one of such ducts for the ingress of cold air, and in its top there are numerous orifices, I I, for the egress and uniform distribution of the air into the casing G.

In the top of the air-chamber there are one or more openings, K, fig. 1, for the egress of the heated air, and these openings may be filled with ducts to convey the heated air to different parts of the building or apartment to be warmed.

When the fire is lighted in the fire-chamber, the smoke and gaseous products of combustion descend the drop-flues D D into the annular bottom flue E, whence they pass to the smoke-pipe F.

The exterior of the fire-chamber, the exterior of the drop-flues D D and smoke-pipe F, and the exterior of the upper and outer side surfaces of the annular flue E, all constitute heating-surfaces.

The cold air entering the distributor J by the duct H is partially heated by the annular smoke-flue E, and thence distributed through the orifices I I into the casing G, and around the fire-chamber, drop-flues, and smoke-pipe, and heated by contact with the exterior surfaces of the said chamber, flues, and pipe, prior to their exit by the opening or openings K.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The drop-flues D D of graduated size, in combination with the fire-chamber A, annular bottom flue E, and smoke-pipe F, substantially as and for the purpose herein described.

2. The perforated annular air-distributor, arranged around the annular smoke-flue E, in combination with the casing G, flues D D, fire-chamber A, and smoke-pipe F, substantially as and for the purpose herein set forth.

JOHN G. PORTER.

Witnesses:

FRED. HAYNES,
HENRY PALMER.