2 Sheets—Sheet 1.

J. B. PIERCE.

HOT-AIR FURNACE.

No. 172,481. Patented Jan. 18, 1876.

Figure 1,

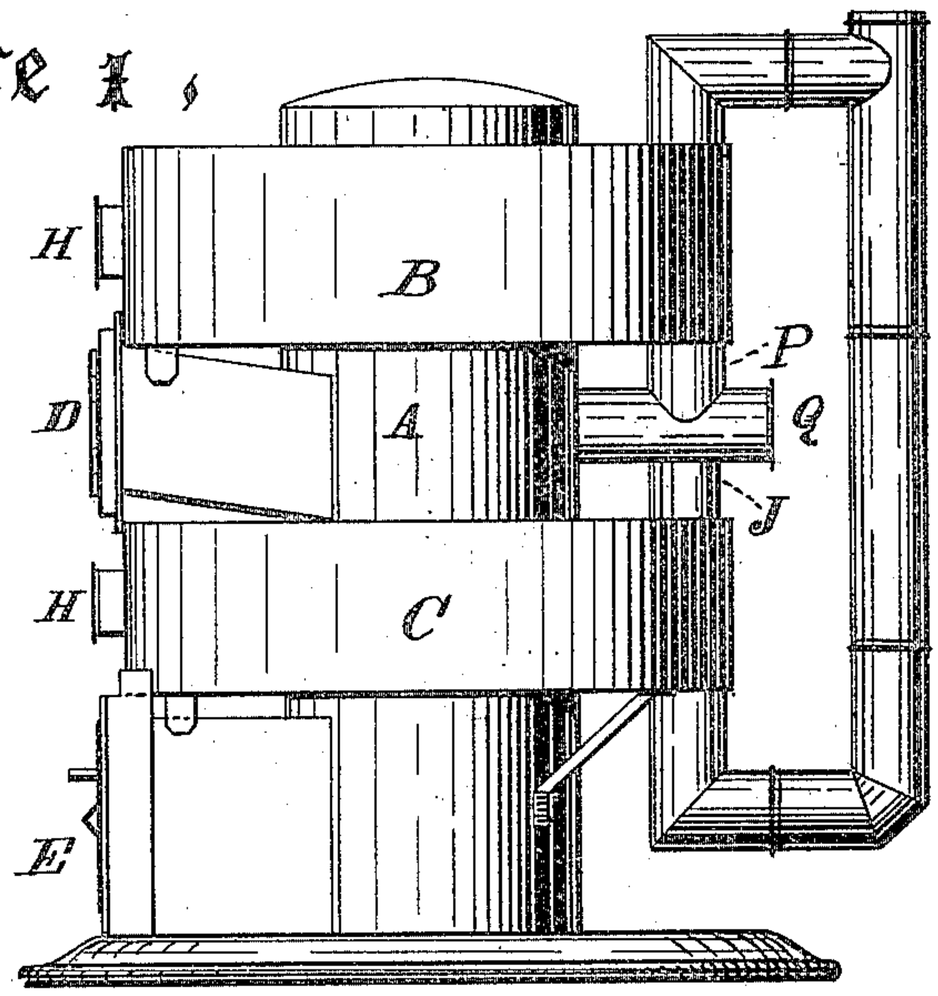
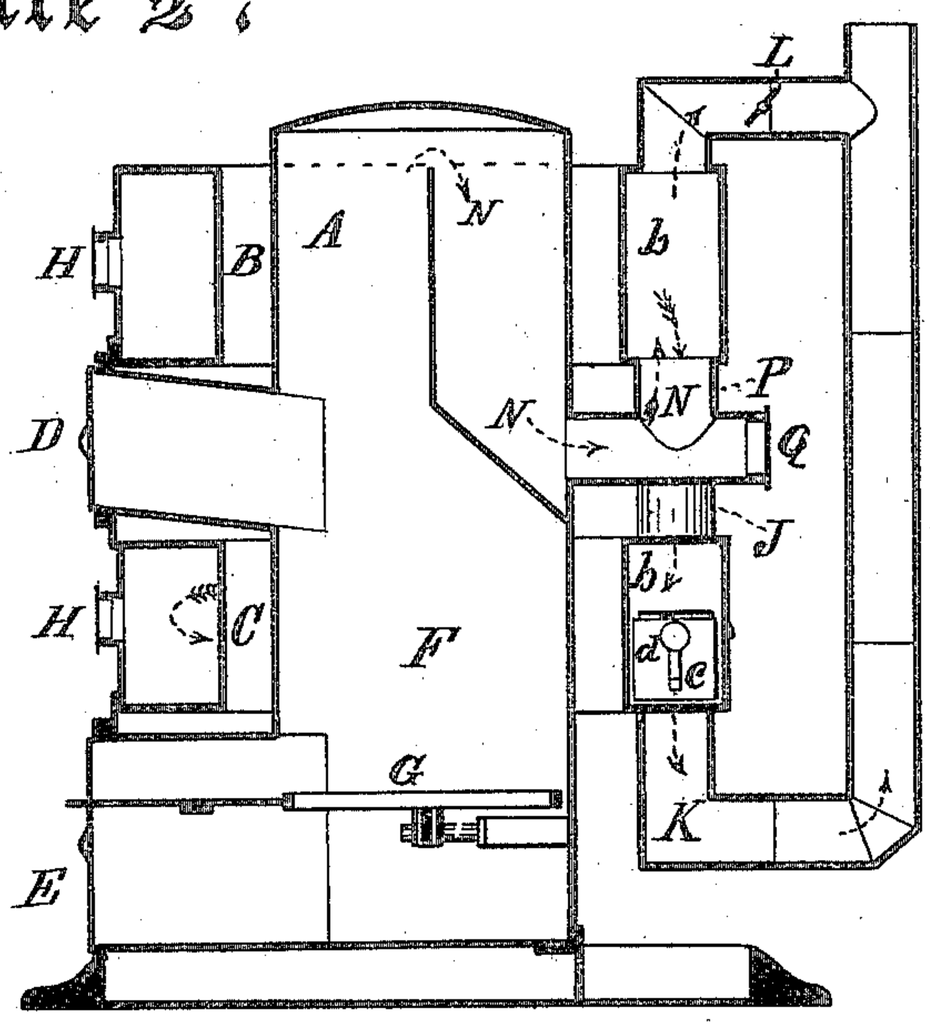


Figure 2,



Witnesses,
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F. P. Fisher.

Inventor,
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By James Sangster
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2 Sheets—Sheet 2.

J. B. PIERCE.

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No. 172,481. Patented Jan. 18, 1876.

Figure 3,

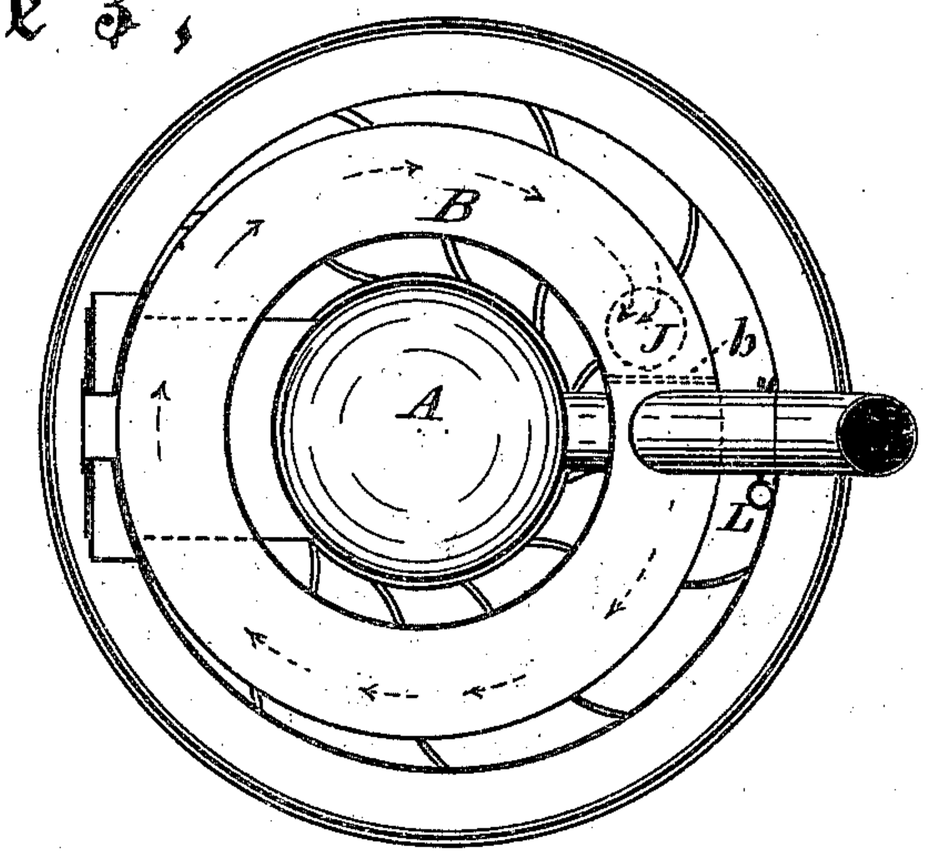
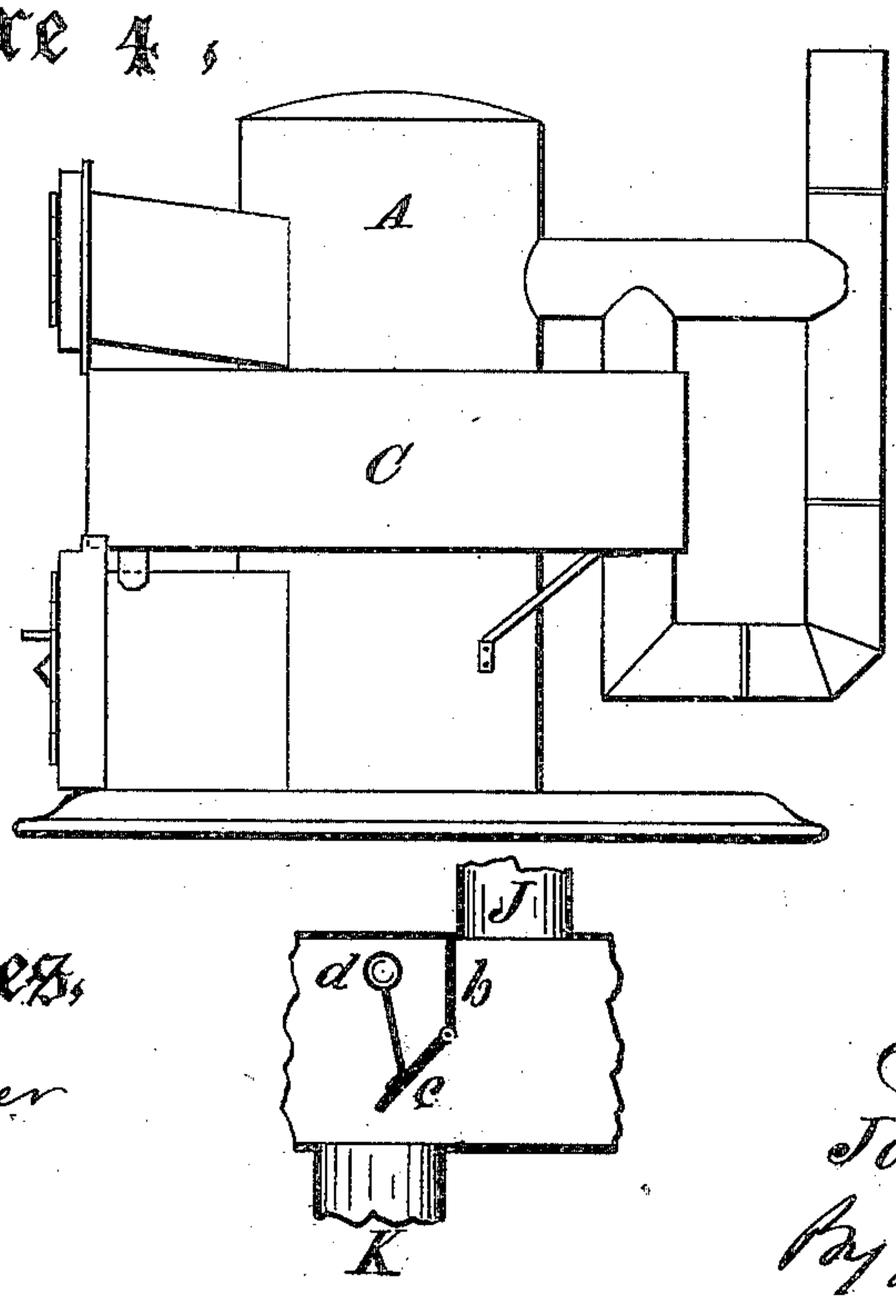


Figure 4,



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UNITED STATES PATENT OFFICE.

JOHN B. PIERCE, OF BUFFALO, NEW YORK.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **172,481**, dated January 18, 1876; application filed December 18, 1875.

To all whom it may concern:

Be it known that I, JOHN B. PIERCE, of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Hot-Air Furnaces, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

This invention consists in the combination of two annular drum-radiators, arranged so that the heat and products of combustion, as they issue from the furnace, may be made (by closing a damper in the pipe) to pass inside of the upper radiator, around the dome of the furnace, thence downward and inside of the lower radiator, around the fire-box of the furnace, and from thence to the chimney; or, by opening the damper in the pipe, it may be allowed to pass directly from the furnace, through the same, to the chimney.

My invention further consists in the combination of one or more removable annular radiators with the furnace, arranged so that one or both may be readily taken off and the furnace used either alone or with one or all of said radiators; also, in the arrangement of a device within the radiators, for affording a convenient means for cleaning them, as will be more clearly hereinafter shown.

In said drawings, Figure 1 is a side elevation of my invention complete; Fig. 2, a vertical longitudinal section through the center of the same. Fig. 3 is a top or plan view; and Fig. 4 represents a side elevation, showing the combination of a single radiator with the furnace, also a fragment of one of the radiators in section, showing the arrangement of a valve inside to allow for cleaning.

A is the furnace; B, the upper, and C the lower, radiator. D represents the furnace-door. E is a door leading to the ash-pit. F, in Fig. 2, is the fire-box, and G the grate. There is a partition, *b*, in both radiators, a valve, *c*, being arranged in the lower one to allow for cleaning. A side view of said valve is shown in sectional fragment below Fig. 4. *d* is a weight for holding the valve down. H H represent openings having removable covers, through which the inside of the radiators may be released and cleaned when necessary.

The operation of the furnace is as follows: When the damper L in the pipe is closed, the products of combustion move, in the direction of the arrows N, into the pipe, thence up into radiator B, through the pipe P, on one side of the partition, thence around and down through the pipe J, on the other side of the partition, into the radiator C, on one side of the valve and partition *c b*, then around it and down through the pipe K, and from thence to the chimney, thereby carrying the products of combustion through the upper radiator, around the upper part or dome of the furnace, and, through the lower radiator, around the outside of the fire-box.

By opening the damper L, as will be readily seen, the heat and gases pass directly from the furnace, through the pipes, to the chimney.

In cleaning the radiators, a scraper is introduced through the opening H, and the ashes or dust are pushed around from both sides (in the upper radiator) toward the pipe-openings J and P, part falling into the radiator C, and part into the pipe Q, from which it may be easily removed by taking off the cover at the end.

The lower radiator is cleaned by introducing the scraper through the opening H and pushing the soot and ashes under the valve *c*, into the opening K on one side, and directly into the said opening from the other side. The valve *c* closes as soon as the scraper is removed.

By taking the smoke-pipe off, which comes apart in the usual way, one of the said radiators may be easily lifted from its place.

I claim as my invention—

1. The combination, substantially as specified, of the hot-air furnace and two connected radiators, respectively arranged above and below the smoke-exit of the furnace, the gases escaping from such smoke-exit passing into the upper radiator, through which they circulate, and from which they are conducted into the lower radiator at one end, to escape into a branch smoke-exit at the other end.

2. The radiators B C, provided with the partitions *b* and valve *c*, combined with the pipes J and P, and made removable, substantially as and for the purposes described.

3. The radiator C, provided with a partition, *b*, and a gravitating weighted valve, *c*, in combination with the hot-air furnace A, all arranged substantially as and for the purposes described.

Witnesses: JOHN B. PIERCE.

JAMES SANGSTER,

F. P. STIKER.