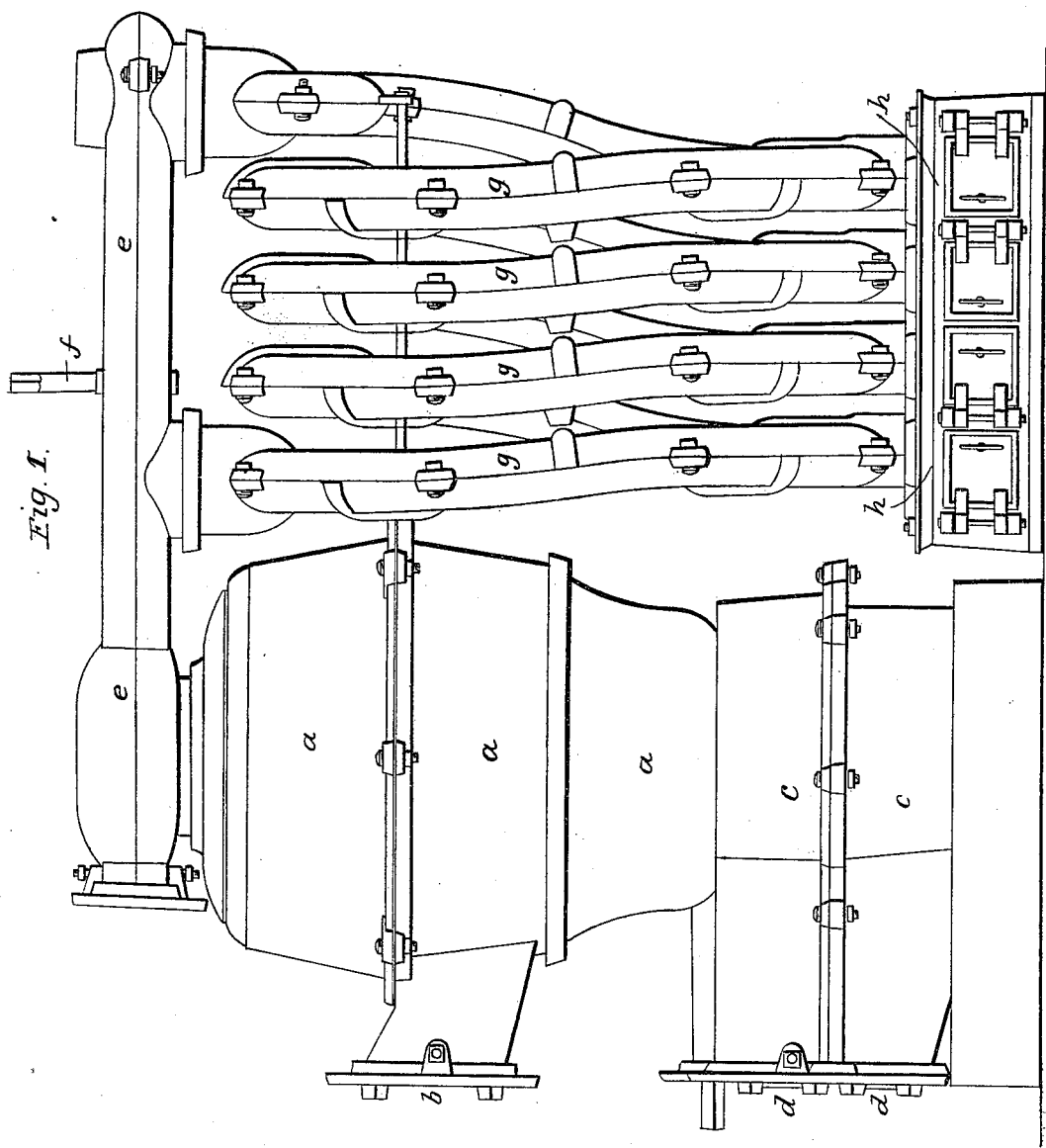


A. RICHMOND.

Hot-Air Furnace.

No. 9,360.

Patented Oct. 26, 1852.

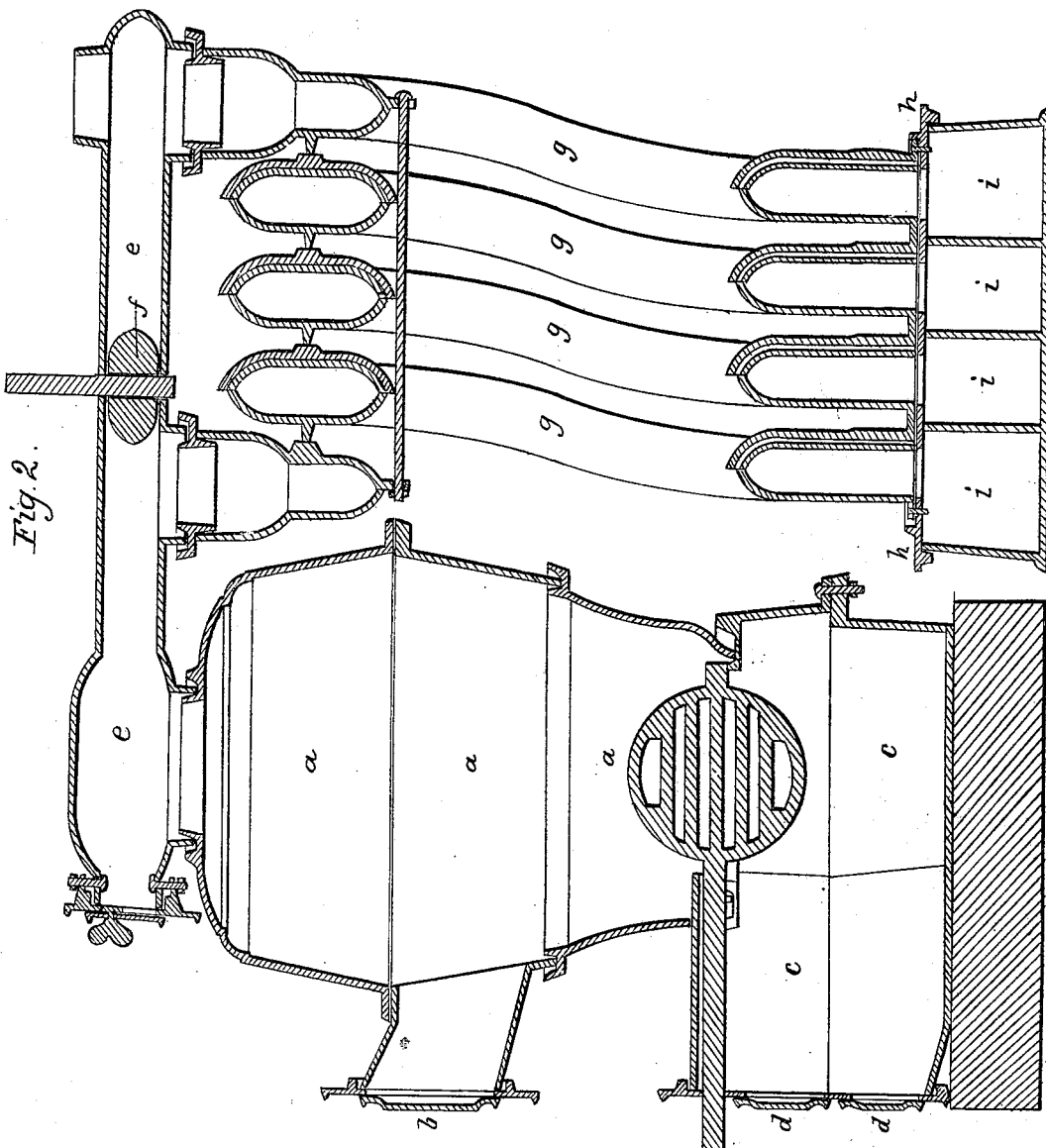


A. RICHMOND.
Hot-Air Furnace.

2 Sheets—Sheet 2.

No. 9,360.

Patented Oct. 26, 1852.



UNITED STATES PATENT OFFICE.

APOLLOS RICHMOND, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO A. C. BARSTOW & CO.

HOT-AIR FURNACE.

Specification of Letters Patent No. 9,360, dated October 26, 1852.

To all whom it may concern:

Be it known that I, APOLLOS RICHMOND, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Heating Apparatus, Applicable to Furnaces, &c., and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plates of drawings represent my improvements.

In Plate 1, Figure 1 is a side elevation of a furnace with my improved radiator attached. In Plate 2, Fig. 2 is a central, longitudinal vertical section of the same.

The object of my improvements is to secure a compact radiator, which shall give an easy and uninterrupted passage to the smoke and other products of combustion, and retain the same till all the heat is extracted therefrom, and, at the same time, expose as much surface to the surrounding air as those now in common use. My radiator is intended to be applied to any kind of heating apparatus, and consists of a spirally coiled, elliptical, circular or other shaped pipe, which communicates by a proper flue with the fire chamber and through the whole of which the smoke, &c., has to pass before it enters the chimney.

a a a in the drawings represents the fire chamber and *b b* the door through which the fuel is inserted, *c c* is the ash pit and *d, d* the ash pit doors. To the top of the fire chamber is attached the long receiving and discharging flue *e e* in the center of which is the damper *f*. To this flue *e e* and connecting therewith, is attached my improved radiator, consisting of a series of elliptical

shaped pipes *g g—g g* &c., spirally coiled in a circular form. By inspection of the drawings, it will be seen that when the damper *f* is closed, the smoke and all the other products of combustion must pass through each and all of the pipes or branches *g g, g g* &c., before entering the chimney, thus keeping the smoke, &c., in the radiator, until all the heat is extracted therefrom, by which arrangement the fuel is used to the best advantage. The pipes being thus heated will form a large radiating surface, and keep the air in the surrounding air chamber, (constructed in any of the well known ways), constantly hot. When the fire is kindling, the damper *f* is opened, allowing the smoke &c. to pass directly into the chimney, instead of circulating through the radiator.

The radiator stands upon a hollow base *h h* which is divided into the same number of chambers *i, i* &c. as there are branches in the radiator, each compartment communicating with each branch, so as to permit the soot &c. which collects therein from time to time, to be readily removed.

It will be obvious that the pipes can be made of a circular, square or elliptical shape, and that they can be coiled into a circular, elliptical or other form, without affecting the general principle of the invention.

Having thus described my improvement in heating apparatus, I shall state my claim as follows.

What I claim as my invention and desire to have secured to me by Letters Patent is—

A spiral radiator, constructed substantially as above described, whether the pipe be of a round, square or oval form in section, or the coils be round, square or other shape.

APOLLOS RICHMOND.

Witnesses:

BENJ. T. EAMES,
G. GILBERT RICHMOND.