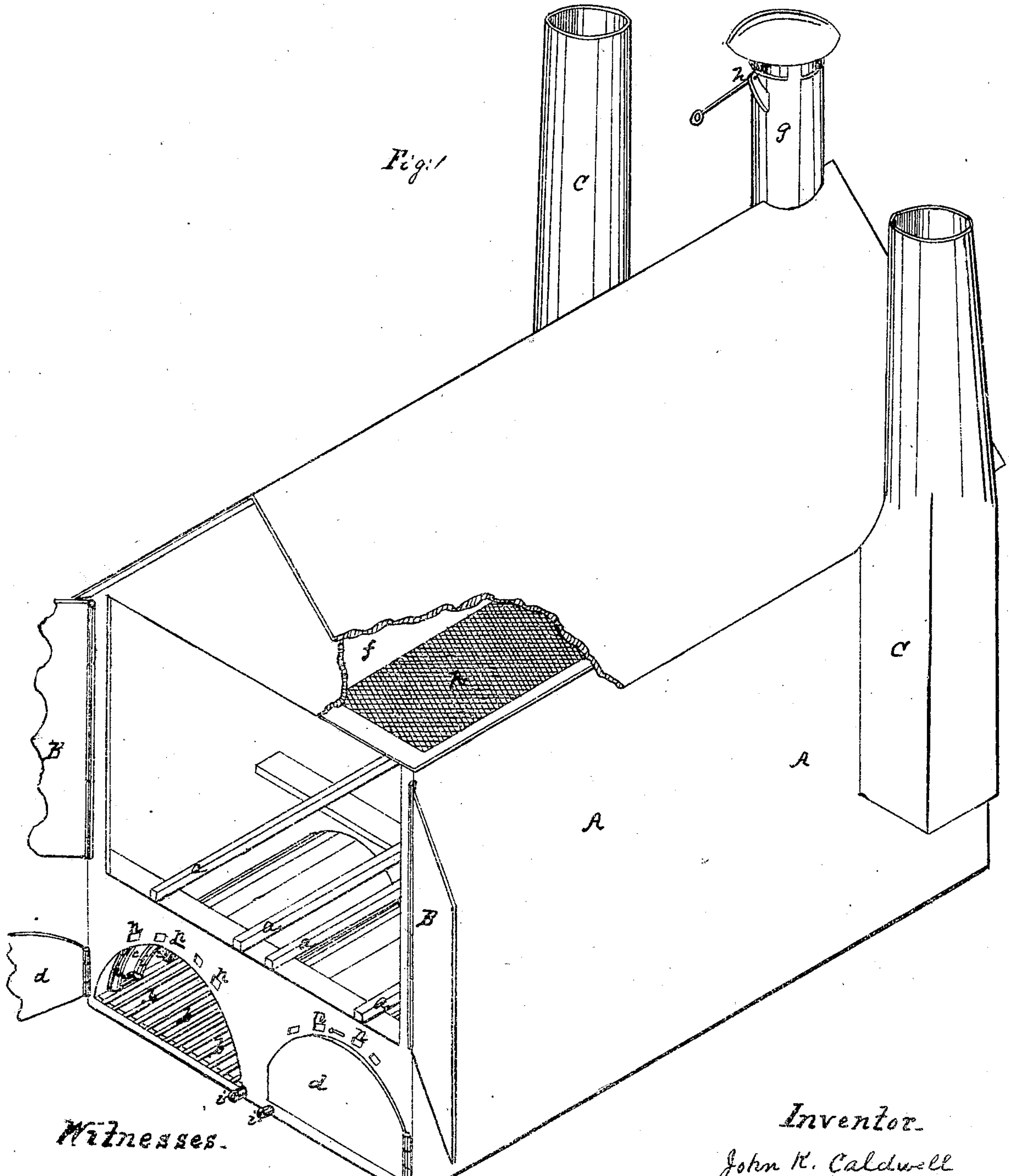
J. K. Caldwell.

Brick-Drying Apparatus.

No 73433 Patented Jan. 21, 1868

Fig. 1



Witnesses.

W. D. Lewis
G. B. Cushing

Inventor.

John K. Caldwell
by Bakewell & Christy
his Attys.

Sheet 2-2 Sheets.

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Fig: 3

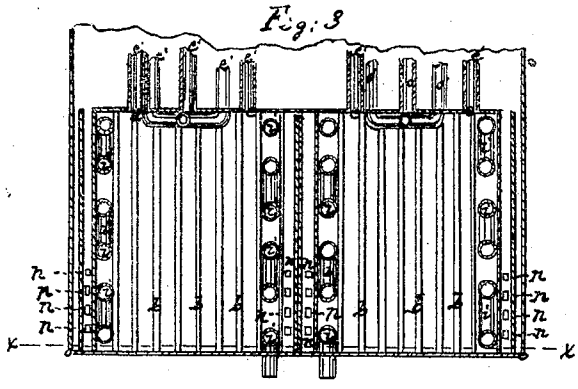
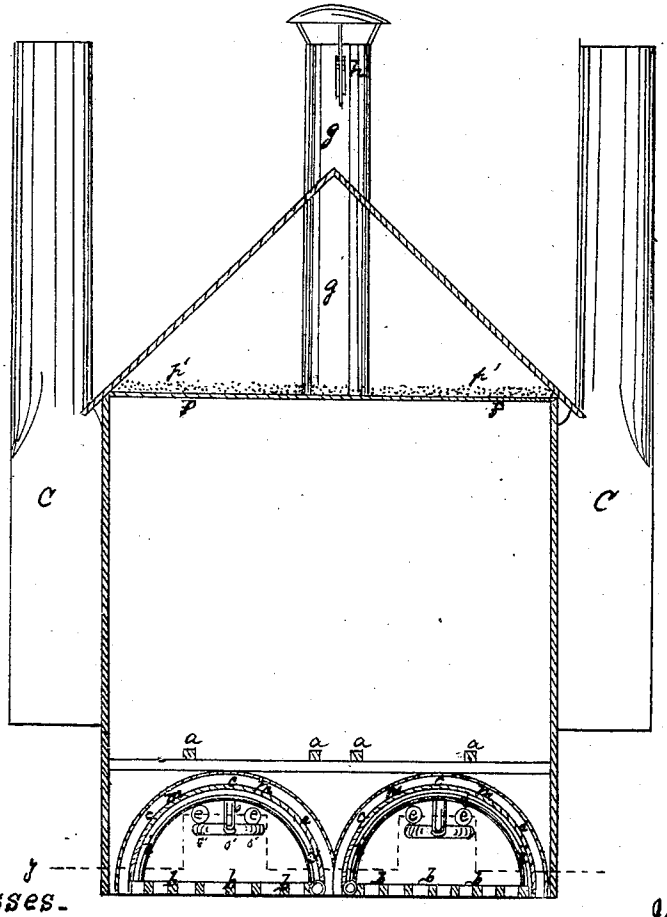


Fig: 2



Witnesses.

W. D. Lewis

E. B. Cushing

Inventor.

John K. Caldwell

by Bakewell & Christy

his Attys.

United States Patent Office

JOHN K. CALDWELL, OF ALLEGHENY CITY, PENNSYLVANIA.

Letters Patent No. 73,433, *dated January* 21, 1867.

IMPROVED BRICK-DRYING APPARATUS.

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 K. CALDWELL, of the city of Allegheny, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Drying Brick and other articles; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved oven.

Figure 2 is a vertical transverse section through the front part of the oven, in the line *x x*, fig. 3; and

Figure 3 is a horizontal section along the line *y y*, fig. 2, and extending back a little beyond the rear end of the furnace.

Like letters of reference indicate like parts in each.

The nature of my invention consists in the arrangement of an improved heating-apparatus for heating air, in connection with an oven for drying lumber, brick, vegetables, or other articles requiring such treatment, such heating-apparatus consisting of a coil or coils of pipe, a heating-chamber, and furnace, so arranged, substantially as hereinafter to be described, as to admit cold air, heat the same, and discharge it, highly heated, into the drying-house, for the purposes above named.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and how used.

A is a drying-house, of any approved size or shape, though I usually make it wide enough to admit one or more cars on the tracks *a a*, and long enough to secure the capacity desired. The drying-house has doors B at either end.

Under the track *a a*, I place a furnace or furnaces, with grate-bars *b*, a roof, *c*, arched or of other desirable shape, doors *d*, and elsewhere closed on all sides, except at the apertures *e*, whence smoke-pipes *e'* lead back to the flues C. I usually put in a number of such apertures, *e*, and a corresponding number of pipes, *e'*, in order to increase the amount of heat-radiating surface.

In each furnace, and in such position as to be acted on by the fire, I arrange a coil of pipe, *i*, open at one end, *i'*, into the external atmosphere, and at the other end, *o*, by branches, *o'*, if desirable, opening into the drying-house. The inner end, *o*, being higher than the outer end, *i'*, a current of air will be carried through the pipes *i*, and discharged into the drying-house at a high temperature.

To secure an increased amount of heating-surface, I make a chamber, *m*, over and on as many sides as may be found practicable, with registers, *n*, in front or beneath, or both, as shown in the drawing. The roof, *c*, of the furnace should be such as readily to transmit heat to the air in the chamber *m*. Such chamber, *m*, I make open in the rear, so as to discharge the air admitted through the registers *n* into the drying-house at a high temperature. In this way I pass several currents of air over and in close contact with a large amount of heating-surface, and discharge the air, thus heated, into the drying-house, where, coming in contact with the articles to be dried, it evaporates the moisture therefrom. At the same time, the hot air from the pipes *o'*, as well as the heat from the smoke-pipes *e'*, co-operates to produce the same result.

In order that the hot air from the drying-house may not become surcharged with moisture, I interpose a floor, *f*, between the oven proper and the roof A'. Some portions of this floor consist of wire gauze, *p*, perforated plate, or other similar material, on which I place a layer of saw-dust, *p'*, or other material of like character which absorbs or takes up the moisture from the hot air of the furnace, and so keeps it in a fit condition for doing its work.

In order that the air of the drying-house may be carried off as fast as it becomes partially cooled, and a constant current be kept up from the furnaces, through the oven, I place a ventilator, *g*, at such part of the drying-house as will secure this result. I make it usually of considerable height, to secure the better draught. At its top I make a damper, *h*, with which to regulate or stop the flow of air at pleasure. Two or more such ventilators, *f*, may be constructed with each drying-house, if so preferred or found necessary, and usually I so arrange them relatively to the furnaces, which may be placed at any desirable part of the oven, so as to secure a current or currents of air through the oven for the purposes described.

With the coils of pipe, *i*, I sometimes use a fan-blower, for the purpose of forcing through them an increased quantity of air.

The advantages I claim are a cheap construction of furnace and drying-house, one well adapted for the uses designed, and free from many of the objections and inconveniences usually experienced. I also secure a large heating-surface, over which to pass the air to be heated, by which the heat generated in the furnace is economically applied to the purposes in view.

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

1. The arrangement of a coil of pipe, *i*, over the fire-space of the furnace of a drying-house or oven, substantially as and for the purposes hereinbefore set forth.

2. A furnace so constructed, with double walls, as to have a chamber, *m*, such chamber being furnished with registers, *n*, or other equivalent device for admitting air, and opening, by any suitable apertures, into the drying-house or oven, substantially as and for the purposes hereinbefore set forth.

3. The ventilators *g*, so arranged, relative to the hot-air chamber *m* and coil or coils of pipe *i*, as to secure a current or draught of air therefrom through the drying-house or oven, substantially as and for the purposes hereinbefore set forth.

In testimony whereof, I, the said JOHN K. CALDWELL, have hereunto set my hand.

JOHN K. CALDWELL.

Witnesses:

A. S. NICHOLSON,

GEO. H. CHRISTY.