O. PADDOCK.

Hot-Air Furnace.

No. 30,752. Patented Nov. 27, 1860.

Fig. 1

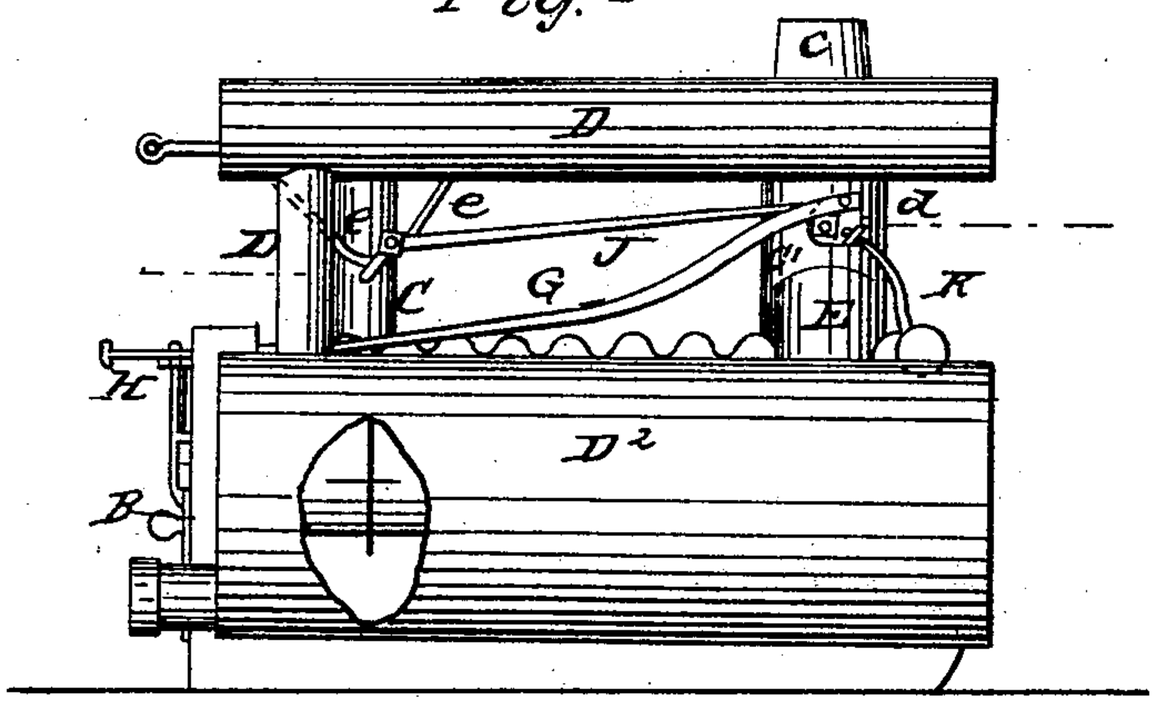


Fig. 2

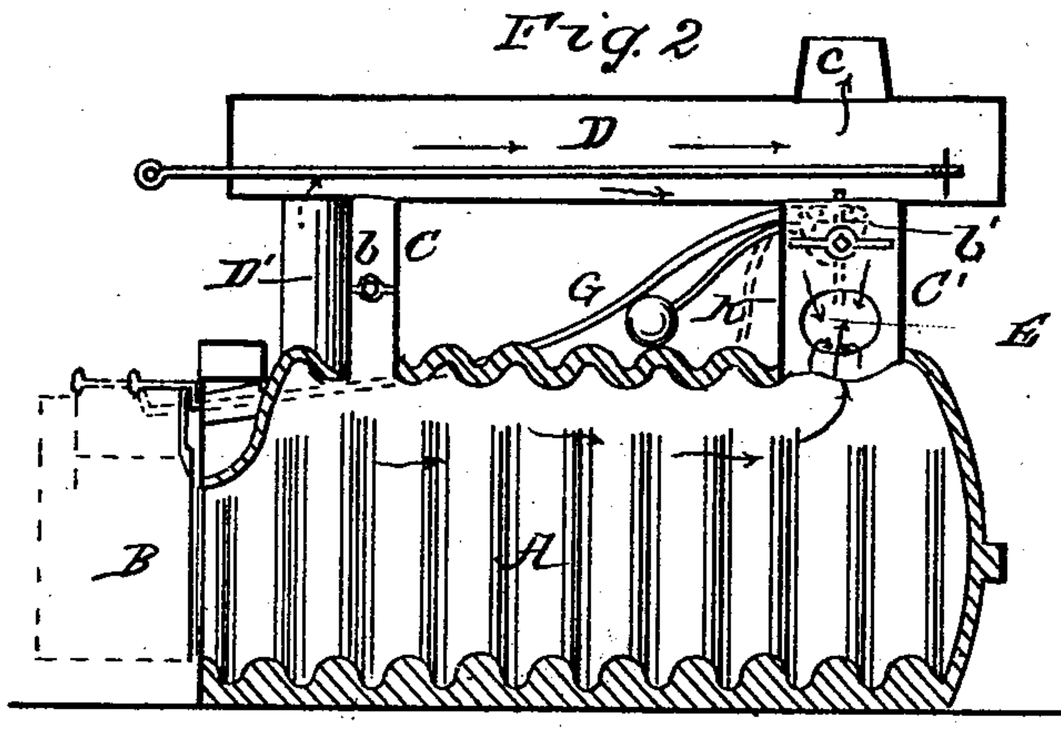
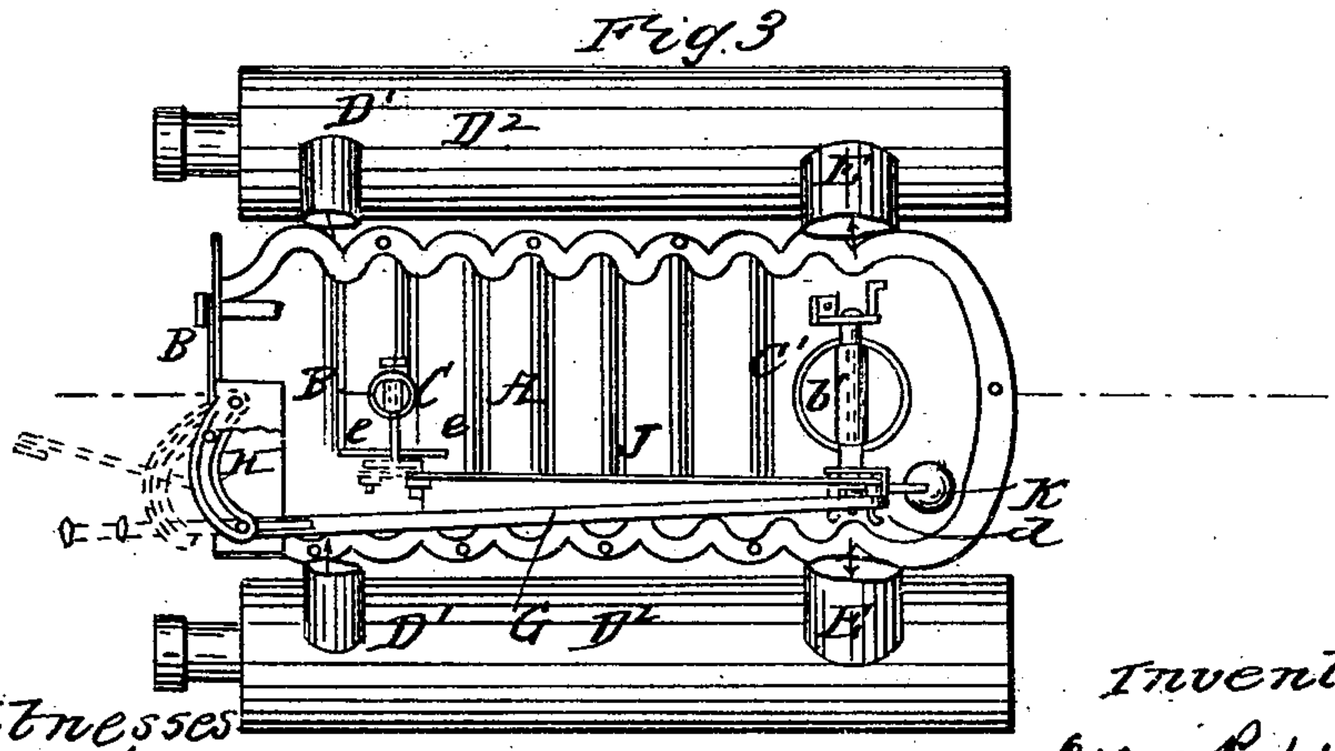


Fig. 3



Witnesses
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UNITED STATES PATENT OFFICE.

OSCAR PADDOCK, OF WATERTOWN, NEW YORK.

HOT-AIR FURNACE.

Specification forming part of Letters Patent No. 30,752, dated November 27, 1860; Reissued November 24, 1863, Nos. 1,574 and 1,575.

To all whom it may concern:

Be it known that I, OSCAR PADDOCK, of Watertown, in the county of Jefferson and State of New York, have invented a new and Improved Method of Operating the Valves of Hot-Air Furnaces; and I do hereby declare that the following is 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 side elevation of a hot air furnace, with the improved valve arrangement applied to it. Fig. 2 is a vertical horizontal section through the furnace with the valve arrangement applied to the left hand side of the furnace. Fig. 3 is a longitudinal section taken in the horizontal plane indicated by the red line *x x* in Fig. 1.

This invention is an improvement on the patent granted to me Sept. 27th 1859, entitled a new and improved stove, the object of which was to prevent the escape of smoke from the door of the stove, when the door was opened for replenishing the fire.

My present invention is especially applicable to the arrangement of valves and smoke flues described in the aforesaid Letters Patent, and it is intended to give the fireman complete control over these valves in starting the fire and in keeping it up. At the same time the invention provides for carelessness on the part of the fireman in leaving the valves open when the fire is fairly started. The two valves are to be so connected with the door by connecting rods, that they will open and close with the door of the stove, or when desirable they may be operated independently of the door—all as will be hereinafter described.

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

A is the shell around the fire chamber which has a door B in its front end and two vertical pipes C, C′ proceeding up from the top and near the front and rear ends. On top of these two pipes C, C′ rests a horizontal flue D and from each side of the front end of this flue is a branch pipe D′ each of which communicates with and help to sustain the side flues D^2. E, E are two branch pipes which form communications with the pipe C′, and side flue D^2.

b b′ are valves placed in the flues C, C′, the valve *b* in flue C′ is above the holes of flues E, E so that when the valves are closed the smoke etc. will pass down through the flues E, E toward the front end of the furnace, through the side flues and thence up through flues D′ D′ and back again through flue D to the chimney pipe *c*, but when both valves are open there will be a direct communication between the fire chamber and the horizontal flue D. In starting the fire, to obtain a sufficient draft it is desirable to have both flues C, C′ open so as to take advantage of the direct draft, and when the door of the stove is opened, to put in fuel, it is desirable to have a direct draft both at the rear and in front of the fire chamber. This draft is obtained by the auxiliary flue C, the valve *b* of which is so connected to the valve *b′* of flue C′ that they can both be opened and closed at the same time.

To effect the opening and the closing of the two valves at proper times I have connected them to the door B, of the furnace by a rod G which is pivoted at one end to the bent arm *d*, of the valve *b′* and at the other end it is pivoted to a pin which projects up from one end of a pivoted slotted sector H in the slot of which an arm projecting from the door of the stove, plays so that the section H is made to swing back and forth by the opening and closing of door B. The connecting rod G is slotted in its front end as shown in Fig. 3 and this slot plays over the pin which projects from the sector arm so that the rod, G and consequently the valves *b*, *b′* will not be directly affected by the door in closing it; only in opening the door will the rod G be moved by it, but in order that the valves may be closed when the door is closed, a weighted arm K is attached to the crank arm *d* of valve *b′* as shown in Figs. 1 and 3 which arm rises and falls in opening and closing the door. The valves are thus opened by the door but closed by the weight on arm K, when the door is closed. *e*, *e* Figs. 1 and 3 are rods which stop the valves when they are open or when they are closed.

The slot in connecting rod G allows an end play to this rod sufficient to open the valves when the door of the furnace is closed, therefore when it is desirable to open the valves to increase combustion in the furnace it may be done by drawing the rod *b′* forward without opening the furnace door,

the weighted arm will close the valves again on releasing the rod G.

The two valves *b b'* are connected together by a rod J, which is pivoted to the bent arms of the valves.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

The combination of weighted arm K, connecting rods G, and J, and valves C, C', arranged in the relation to each other, and to door B, herein set forth; and operating substantially in the manner and for the purposes described.

OSCAR PADDOCK.

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