

A. H. BARTLETT.

Hot-Air Furnace.

No. 30,039.

Patented Sept. 18, 1860.

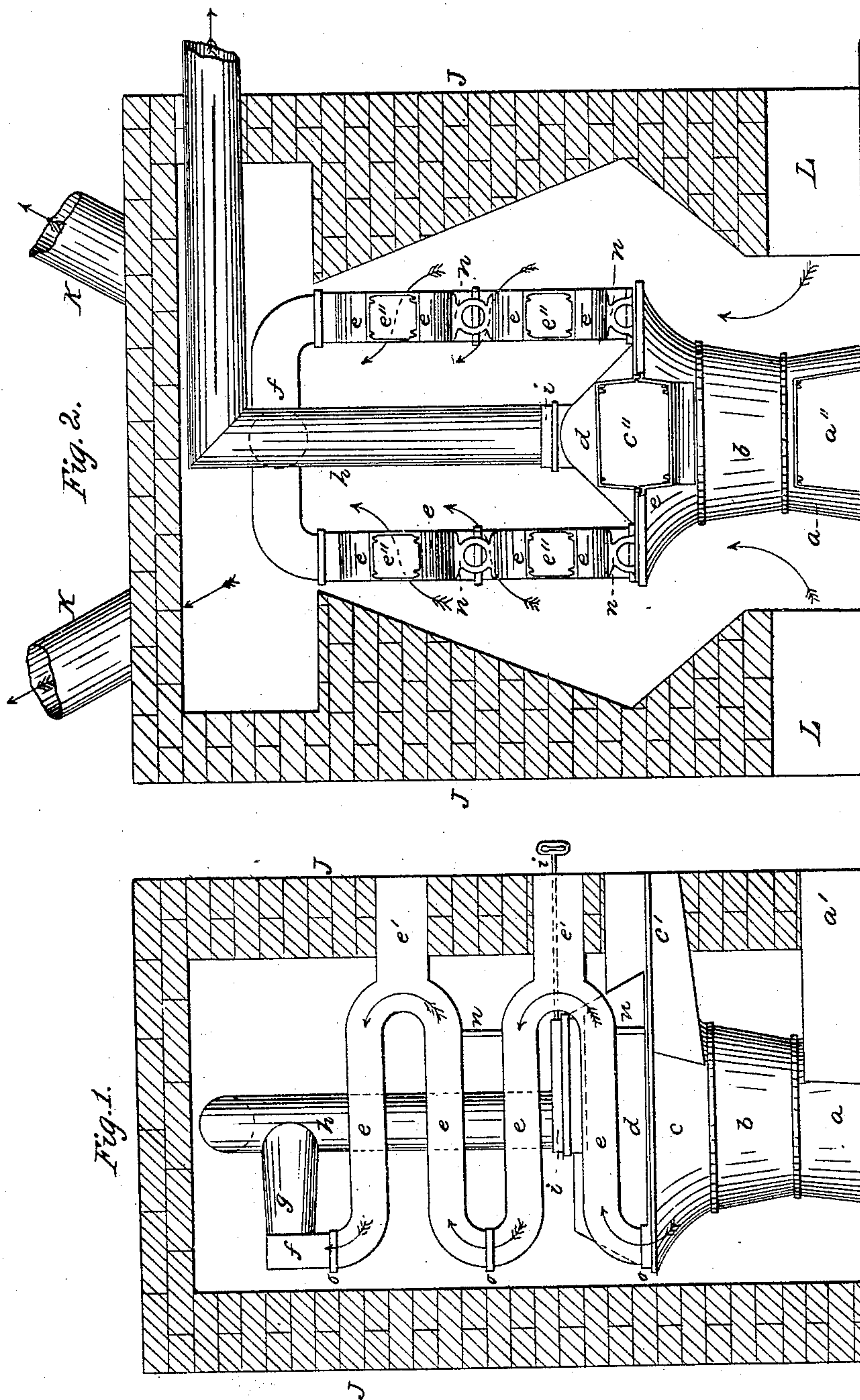


Fig. 1.

Witnesses:  
William H. Chapman  
Levi G. Nichols

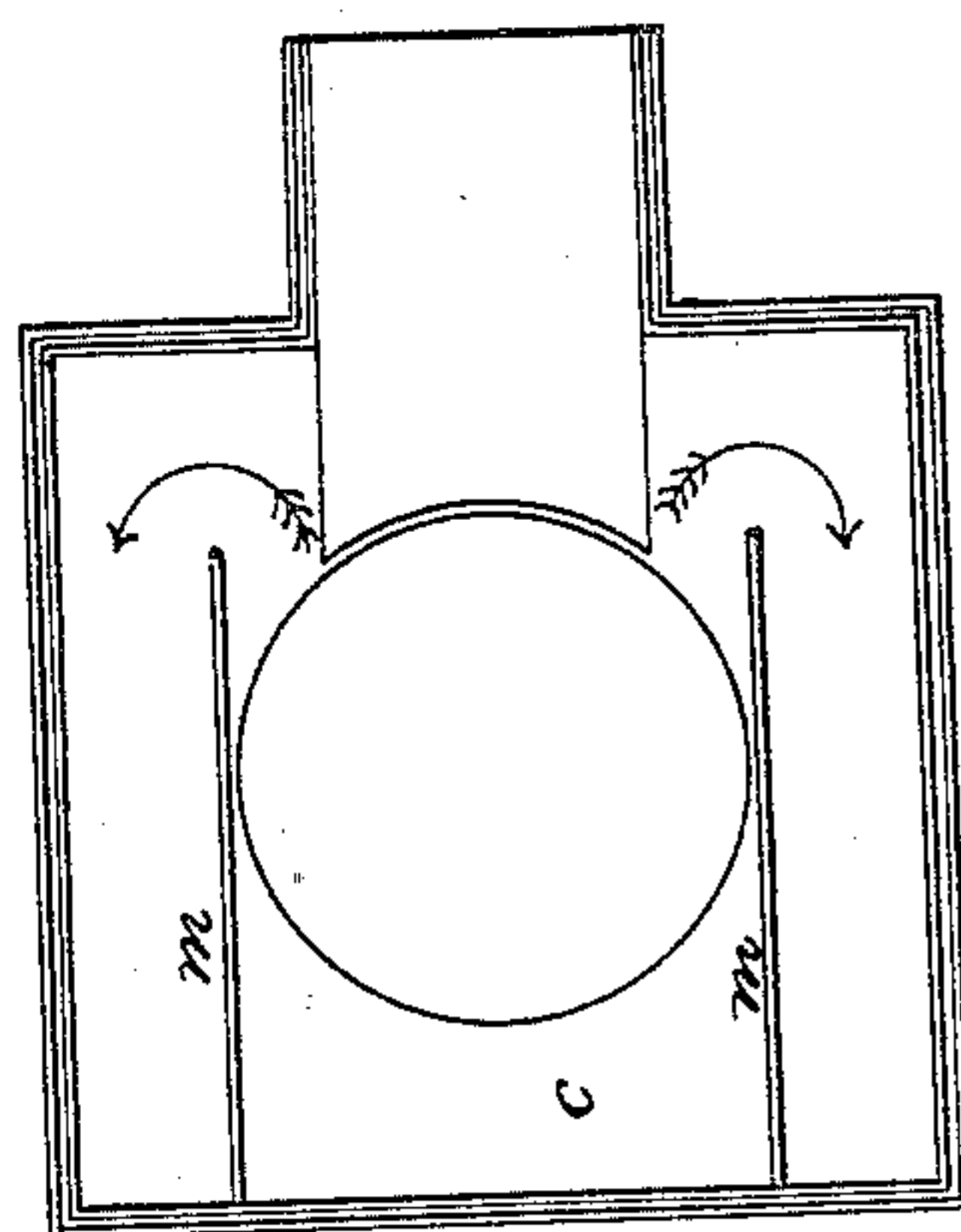
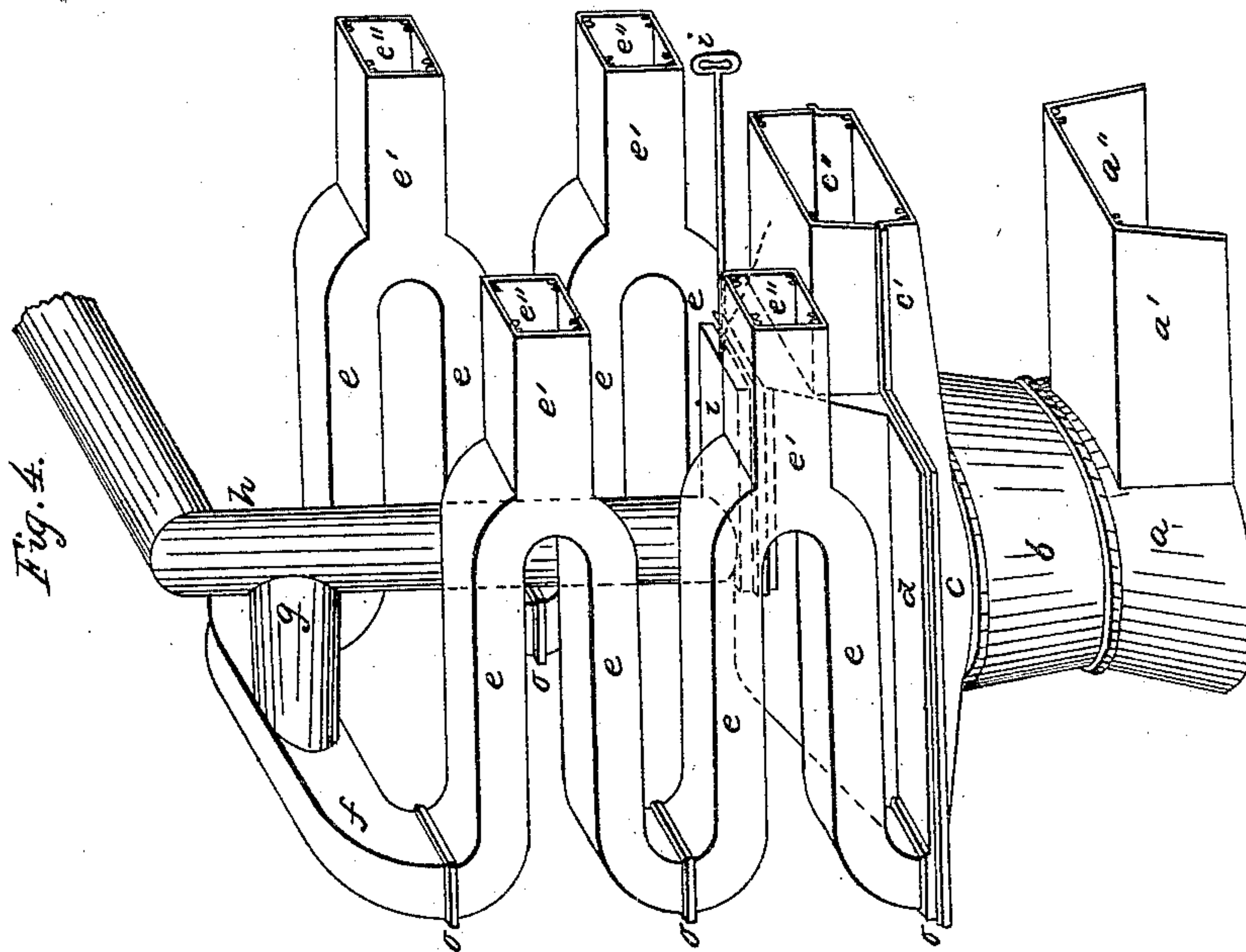
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# UNITED STATES PATENT OFFICE.

ABEL H. BARTLETT, OF SPUYTEN DUYVIL, NEW YORK.

## HOT-AIR FURNACE.

Specification of Letters Patent No. 30,039, dated September 18, 1860.

*To all whom it may concern:*

Be it known that I, ABEL H. BARTLETT, of Spuyten Duyvil, county of Westchester, and State of New York, have invented certain  
5 new and useful Improvements in Hot-Air Furnaces for Warming Houses; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being  
10 had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side view of my improved hot air furnace with the brick-work nearest the eye removed.

15 J, J, represent the brick-work; *a, a'*, the ash-pit; *b*, fire pot; *c, c'*, feeder, (hopper and feeder); *d*, dome plate over the fire.

*e, e, e'*—*e, e, e'* are the radiators through which the smoke passes in a serpentine  
20 course as indicated by arrows.

*o, o, o*, are the joints where the radiators connect with one another and to the plates *d*, and *f*. The radiators of which two are represented are cast whole and in such a  
25 manner that one pattern will answer for casting all the radiators needed, enabling them to be placed one above the other as shown in the figure to any required height.

*f*, is a continuation flue for the smoke and  
30 connects at each end with the two uppermost portions of the radiators *e, e*—*e, e*, as best shown in Fig. 2.

*g*, Fig. 1, is a pipe connecting the flue *f*, to the upright smoke pipe *h*.

35 *i*, is the damper box inside of which is the damper.

*i'*, is the damper handle.

*n, n*, are supports for the radiators.

40 Fig. 2 is a front view with the brick nearest the eye removed.

*a*, is the ash pit; *a''*, opening to admit air for the fire and to enable the ashes and cinders to be withdrawn; *b*, fire pot; *c*, feeder; *c''*, feeder opening to admit the coal; *d*,  
45 dome plate with high gable over the fire; *i*, damper box; *n, n*—*n, n*, supports for the radiators *e e, e e*—*e e, e e*. The radiators are arranged one above the other both sides and resting on the horizontal portions of  
50 the dome plate *d*.

*e'', e''*—*e'', e''*, are openings in the radiators to enable them to be cleaned easily.

*f*, is a flue connecting the uppermost portions of the radiators and also connecting as  
55 shown by circular dotted lines with the direct and upright smoke pipe *h*.

J, J, represents the brick work and shows the manner of constructing the walls which project at J'—J', for the purpose of turning the air through the radiators and thus  
60 extracting the heat which the smoke would otherwise convey to the chimney.

L, L, are openings to admit the air to be heated, which passes in in the direction of the arrows and out through the pipes *k, k*,  
65 to the rooms to be warmed.

Fig. 3 is a top view of the feeder or hopper *c*, shown in Figs. 1, 2 and 3.

*m, m*, Fig. 3, are two plates extending from the feeder *c* to the dome *d* (Fig. 2).  
70 These plates *m, m*, serve the purpose of preventing the smoke and heat from the fire from passing immediately into the radiators but turns it around in the direction of the arrows, thus causing a greater extent of fire  
75 travel.

Fig. 4, is a perspective view of the same furnace without the brickwork; *a, a'*, ash pit; *a''* ash pit mouth; *b* fire pot; *c, c'*, feeder; *c''*, feeder mouth piece; *d* dome  
80 plate.

*e, e, e' e, e, e', e, e, e', e, e, e'* are radiators, and *e'', e'', e'', e''* are openings in the radiators to enable them to be cleaned.

*o, o, o, o*, are joints where the radiators  
85 connect to one another and to the dome plate *d*, and to the connecting flue plate *f*.

*g*, is a smoke pipe connecting the flue *f*, to the upright smoke pipe *h*.

*i*, is the damper box, and *i'* is the damper  
90 handle which is connected to a damper inside the damper box.

The operation of this furnace is as follows: Pull out the damper rod *i'*. Then pass the fuel through the opening *c''* into  
95 the fire pot *b*, and when ignited the smoke arises in a perpendicular course into the smoke pipe *h*, and from thence into the chimney. When the fire is well kindled, close the damper by pushing in the damper rod  
100 *i'*. When the smoke and heat from the fire is divided, part passing to the right and part to the left when standing in front of the furnace around the plates *m, m*, (Fig. 3) and into the lower portion of the radiators  
105 *e, e, e e*, traveling in a serpentine course through their whole length, as shown by arrows in Fig. 1. From thence it passes into the flue *f*, where the smoke is united in passing through the pipe *g* into the pipe  
110 *h*. From thence it passes to the chimney. The air meanwhile is admitted at L, L, Fig.

2, and passes in, in close proximity to the fire pot *b*, thence up between the radiators uniting over the dome plate *d*, and from thence through the pipes *K, K*, to the rooms  
5 to be heated.

I claim and desire to secure by Letters Patent—

1. The employment of radiators *e*, that are each made with two separate straight  
10 legs having curved extremities and an arched shoulder with a horizontal neck *e'*, projecting therefrom as shown, so that the said radiators may be cast in one piece of metal and so that when the curved extremi-  
15 ties are laid one upon the other a continuous fire flue or radiator of vertical serpentine

form is made, the necks *e'*, serving to facilitate the cleaning of the radiators besides supporting and strengthening the pile by being laid on the brick work all as herein 20 set forth.

2. The special arrangement as herein shown and described of the plates *m, m*, dome plate *d*, fire pot *b*, radiators *e*, and flues *f, g, h*, for the purpose specified. 25

In witness whereof I have hereunto subscribed my name this sixth day of December eighteen hundred and fifty eight.

ABEL H. BARTLETT.

In presence of—

W. F. T. CHAPMAN,

LEVI G. NICHOLS.