

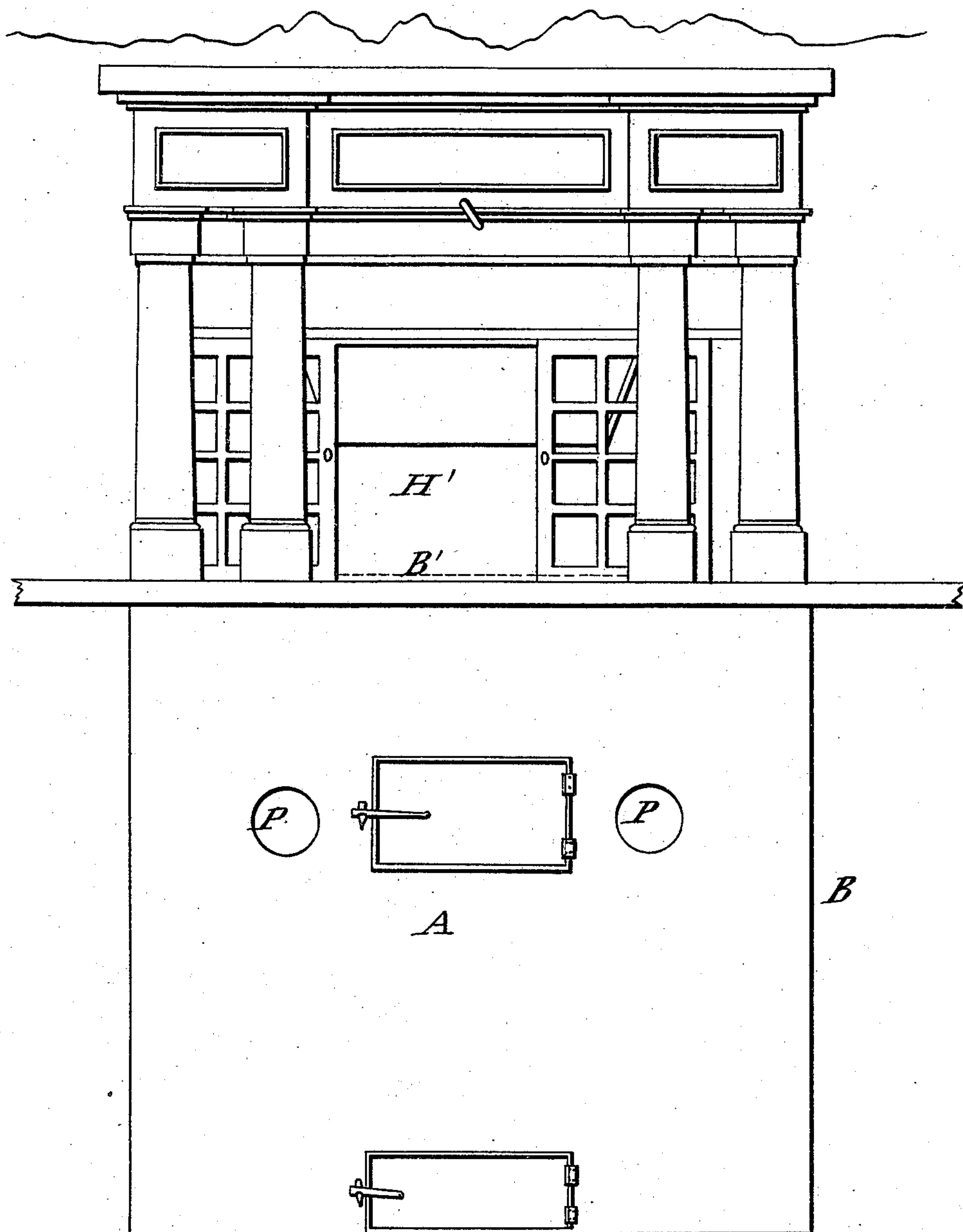
3 Sheets—Sheet 1.

R. MITCHELL.

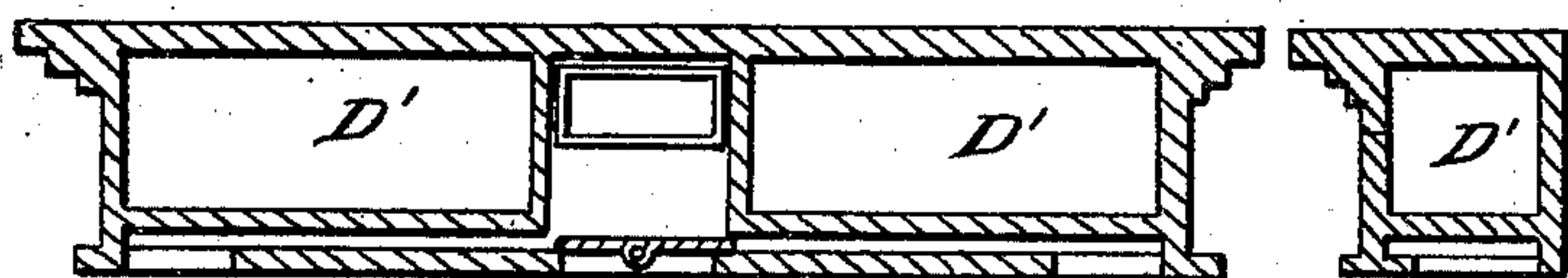
Apparatus for Heating Buildings.

No. 2,550.

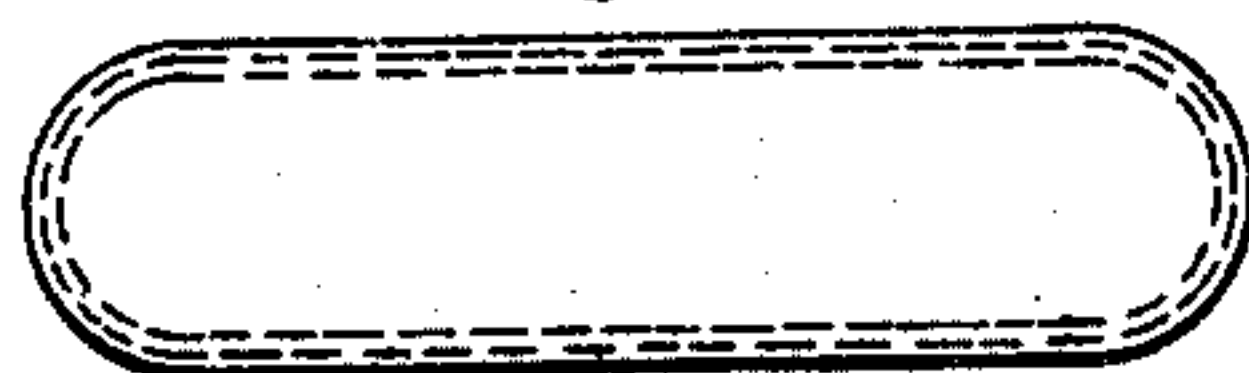
Patented April 11, 1842.



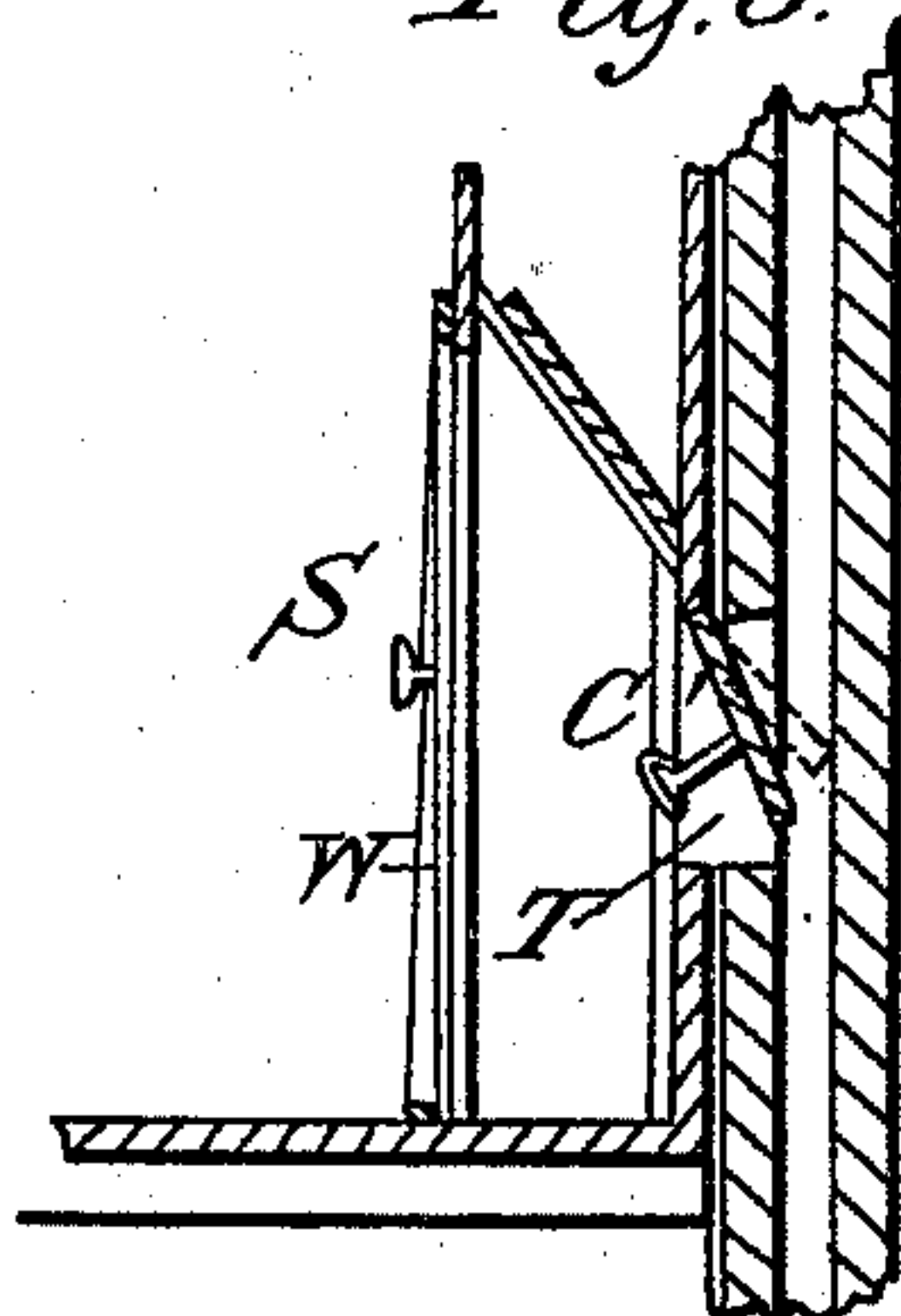
*Fig. 7.*



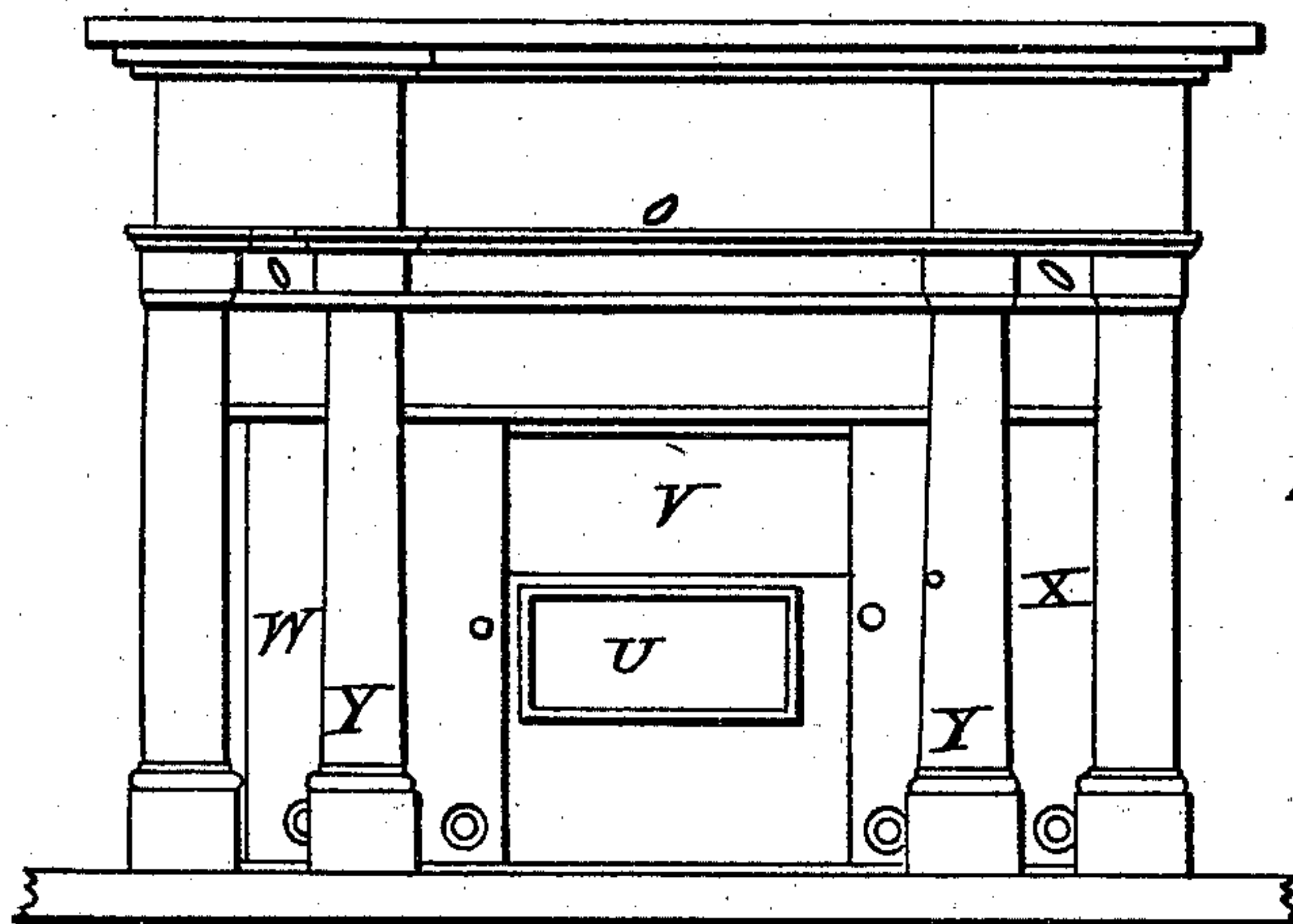
*Fig. 5.*



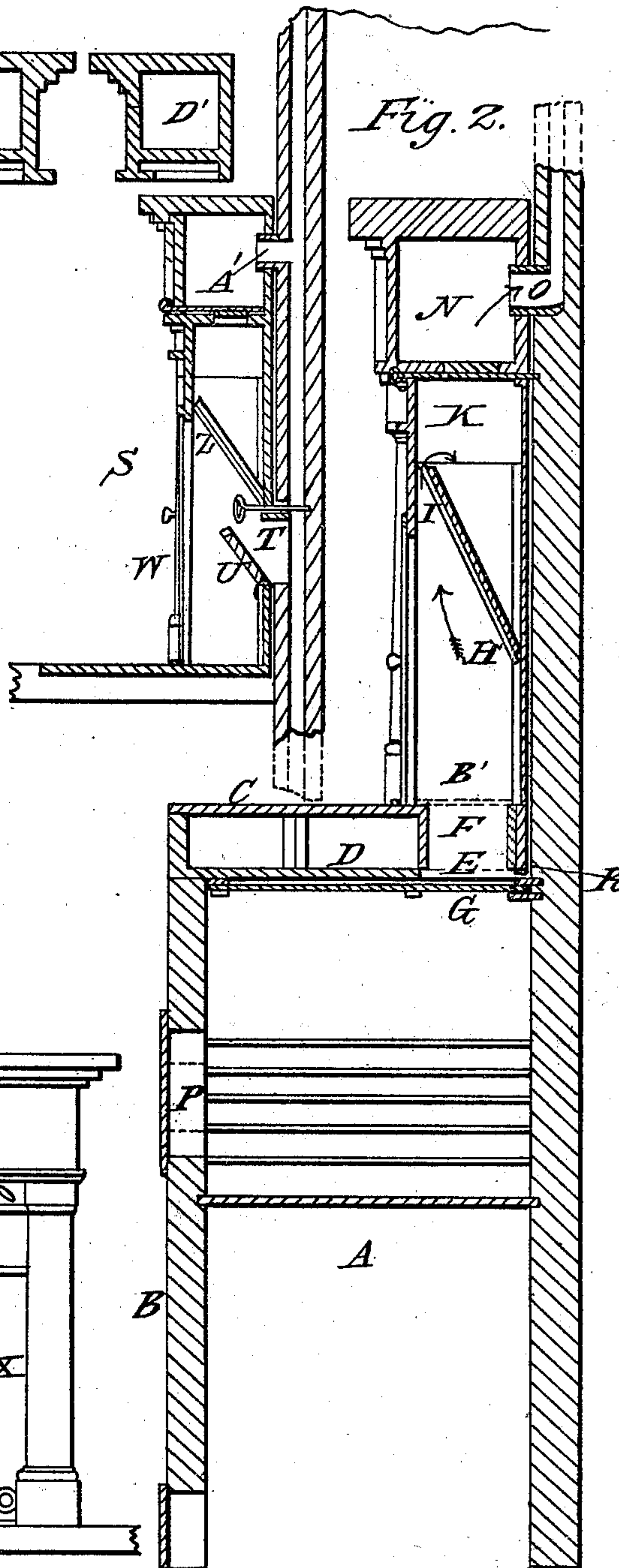
*Fig. 6.*



*Fig. 1.*



*Fig. 2.*



R. MITCHELL.

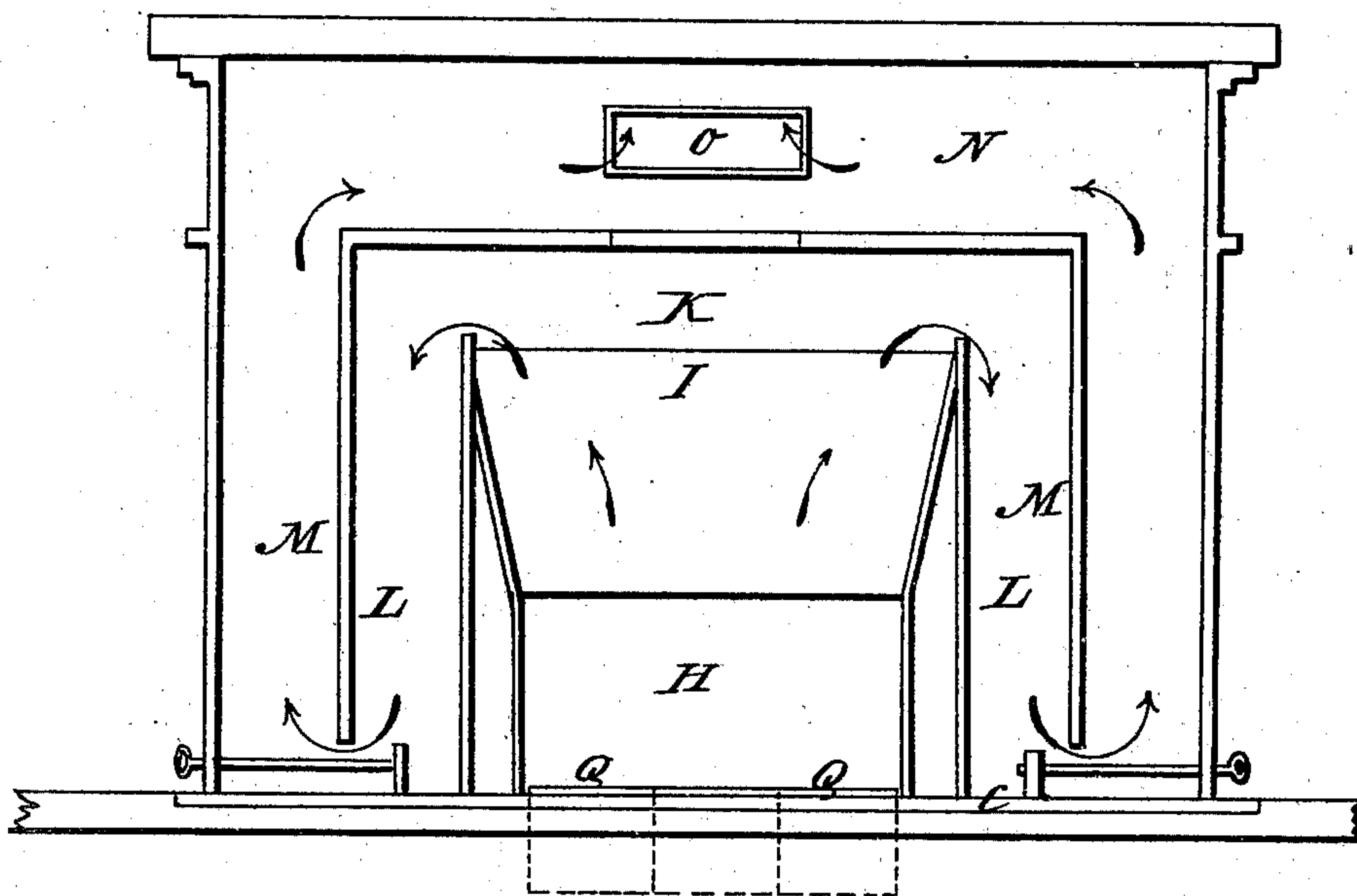
3 Sheets—Sheet 3.

Apparatus for Heating Buildings.

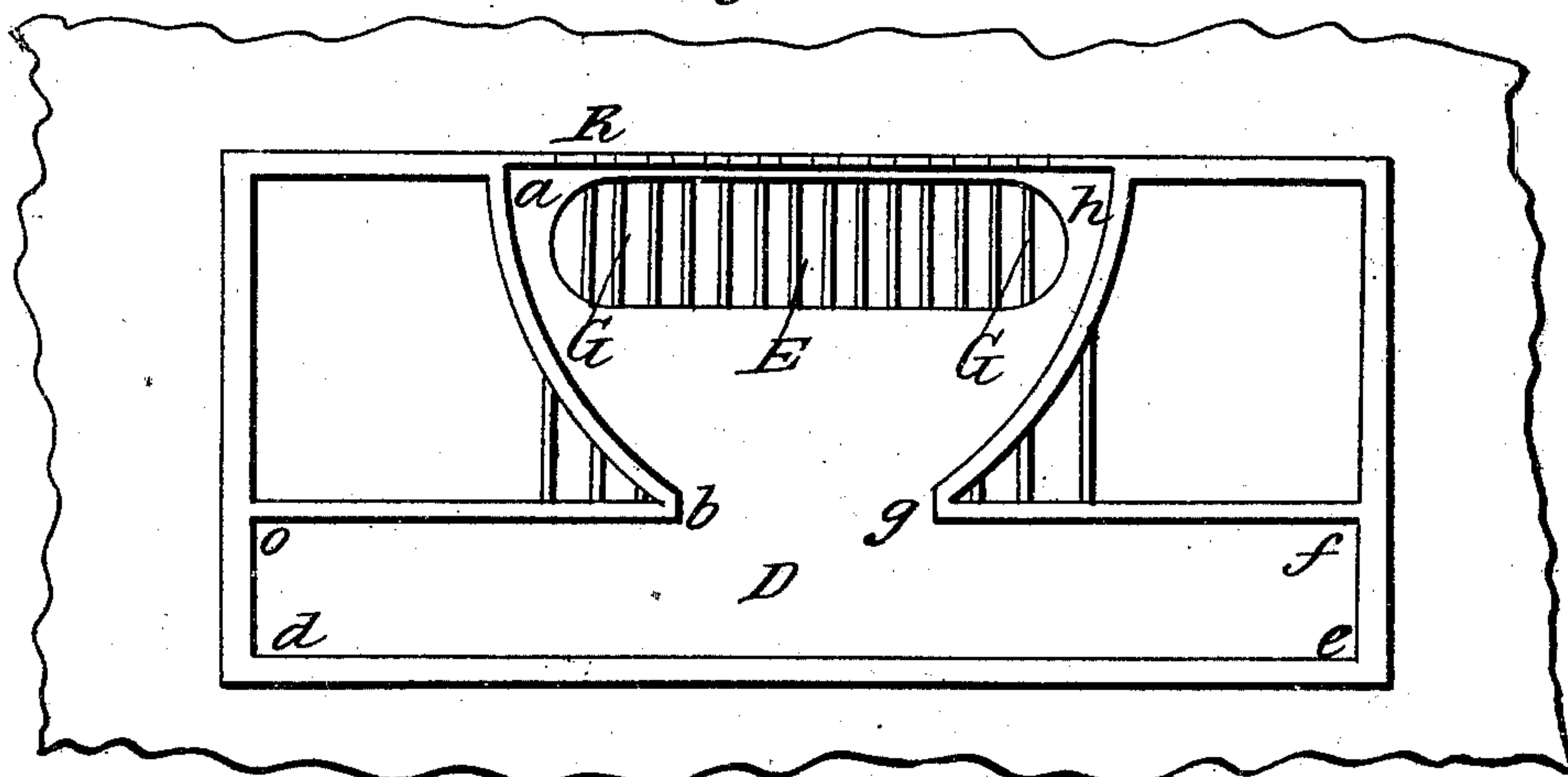
No. 2,550.

Patented April 11, 1842.

*Fig. 4.*



*Fig. 3.*





# UNITED STATES PATENT OFFICE.

REUBEN MITCHELL, OF PORTLAND, MAINE.

## HEATING BUILDINGS.

Specification of Letters Patent No. 2,550, dated April 11, 1842.

*To all whom it may concern:*

Be it known that I, REUBEN MITCHELL, of Portland, in the county of Cumberland, in the State of Maine, have invented a new, useful, and Improved Apparatus for Warming the Apartments of Buildings, of which the following description, taken in connection with the accompanying drawings, therein referred to, form a full and exact specification.

In said specification I have set forth the nature and principles of my improvements, by which they may be distinguished from others of like character, together with such parts or combinations of the same as I claim and for which I solicit Letters Patent.

Figure 1, of the above mentioned drawings, represents a front view of my apparatus as arranged in a building, the cellar and first and second stories of which are also exhibited. Fig. 2 is a vertical transverse section of the above. The remaining figures will be particularly described hereafter.

As grates for the combustion of coal are now generally arranged, they have an opening formed in the hearth directly beneath them, through which the ashes and cinders fall or are sifted into an ash pit, which is a rectangular or other proper shaped brick chamber constructed in the cellar or built up otherwise from the floor to the ceiling. In Figs. 1 and 2, this chamber or ash pit is represented at A as erected in the cellar B.

At a suitable distance beneath the hearth C, or top covering of the ash pit, a horizontal partition or flooring D extends very nearly over the whole of the interior of the ash pit. In Fig. 3, (which is a horizontal section of the ash pit taken immediately below the hearth,) the flooring D is seen as extending over the space *a b c d e f g h*, or as bounded by vertical sides *a b*, *b c*, *c d*, *e f*, *f g*, *g h*, and *h a*, which are raised perpendicularly from the floor D to the hearth above the same.

The space included between the vertical sides *a b*, *b c*, &c., forms a hot air chamber from which pipes may lead to a hall or entry or into any room into which we wish to introduce hot air.

An aperture E, of suitable shape, is made through the rear part of the flooring D, and the furnace or fire pot F is arranged directly over the aperture, as seen in Fig. 2, a grate G being inserted in the aperture or in the bottom of the fire pot. It will be seen that

the upper part of the fire pot is on a level with the hearth of the fire place H, which latter with its jambs is arranged over the fire pot.

The fire place is to be constructed, so that the smoke and gases, shall pass upward from the fire pot, through the throat or opening I of the upper part of the fire place into a space K above the same. From thence the smoke passes aside to the right and left, as denoted by the arrows in Fig. 4, (which figure is a front elevation or representation of the interior of the fire place with its front removed) and into and down side flues L, L, thence passing under partitions M, M, and thence upward as denoted by arrows, into a rectangular chamber or entablature N, arranged over the space K, and finally escaping from this entablature into the chimney or main flue through an opening or passage O Fig. 2, which connects said entablature with the chimney.

From the above it will be observed that the apartment in which the fire place, with its ascending and descending flues, are erected, is warmed by the heat of the flame and gases which escape from the fire pot, and is reflected by the jambs of the fire place and is radiated from the sides of the ascending and descending flues and mantel or entablature.

The fire pot is supplied with air from the ash pit beneath the same, which latter communicates with the atmosphere of the cellar by one or more openings P, P, cut or formed through its walls.

The fire pot may be made elliptical or elongated in its horizontal section or in lieu of one fire pot there may be two or more, inserted in the hearth, so that one or the whole or any number of them may be used at once as occasion may require.

In Fig. 4, three fire pots Q, Q, Q, are exhibited as arranged in the rear of the hot air chamber, the air which is to be heated and supplied from said chamber to such apartments as are warmed by the same, passing into said chamber through an opening or openings, R Figs. 2, 3, in the rear side of the chamber.

In order to warm the apartment S, or the second above the cellar, a fire-place with ascending and descending flues similar to that herein-before described, is set up in said apartment, so as to be over or nearly over the fire-place in the room below. The grate



in this second fire-place may be arranged like those in common use, or may be embedded in the hearth and may communicate with the ash pit by a suitable flue.

5 An opening T should be made in the rear of the fire place as seen in Fig. 2, which may be closed by a door or valve U whenever requisite. The main flue of the chimney should have a common valve or damper  
10 V arranged in or above the opening or passage T as seen in the drawings. The fire place should have sliding iron doors W, X, each of which may be arranged, so that when not in use for their requisite purpose  
15 it may be slid into a suitable space in rear of the pilasters Y, Y. When these doors are slid forward or toward each other so as to meet or come into contact, they close up the entire front of the open space of the  
20 fire-place. Then by closing the chimney by the damper V and opening the valve U, the hot air and other combustible products, which arise from the fire-place in the room below, will pass through the open-  
25 ing T into the body or central part of the fire place and thence upward through its throat Z and after duly circulating through its descending and ascending flues, will escape into the main chimney or flue through  
30 the passage A', which like the opening O connects the fire-place with the chimney. Therefore as the hot air circulates through the fire-place of the room S in manner described it will impart heat to its sides and  
35 to the doors W X, which radiating the same will warm the apartment S.

Should it be desirable at any time to use the fire places for the purpose of burning wood or to disconnect the lower fire-place  
40 from the hot air-chamber under it, a cast iron plate or slab of stone B' represented by dotted lines in Figs. 1 and 2 and shown in top view in Fig. 5 may be laid over the top of the fire-pot which will cover the same, so  
45 that the fire may be built on the upper surface of the plate B' or over the same in any of the usual methods. Also by closing the valve U the upper fire-place may be used for burning wood or coal separate from that be-  
50 low. Therefore, whenever a house has its fire places arranged in the above described manner, the double advantage of furnace and fire-place is gained, so that those persons who prefer one or both can be suited.

55 Fig. 6, exhibits the main flue and opening T from the same into the rear of the fire-place which opening may have a valve door

c' to close it hinged at its upper edge. When said valve door is pushed inward, as represented by dotted lines in the figure, it  
60 closes the main flue and directs the smoke into the fire-place. By a similar arrangement of fire places any number of apart-ments may be warmed on the above prin-  
65 ciples. The kitchen fire-place may have ovens D', D', arranged in its mantel as seen in Fig. 7, (which is a vertical and longitudinal section of the mantel). The smoke from the ascending flue, passing under the bottom  
70 and inner side of each oven and then escapes into the chimney. The lower fire place may have sliding doors in its front similar to the doors W, X, of the upper. When the fire is first kindled these doors  
75 should be closed so as to prevent the smoke from coming into the room, or when the air is "heavy" they should be closed by which operation the smoke and gases are more  
effectually forced up the chimney.

Having thus described my improvements  
80 I shall claim—

1. Arranging a hot air chamber beneath the hearth of the fire-place or between said  
hearth and the ash chamber under the same and in combination therewith, depressing  
85 the fire pot or furnace below the level of the hearth or into the hot air chamber, the same being constructed substantially as herein-  
before described and for the purposes before  
90 mentioned.

2. Also constructing the upper fire-place with sliding doors W, X, by which it may  
be closed and forming an opening T in its rear and a damper in the main flue above  
95 said opening, by which arrangement the smoke and other heated products of combustion may be caused to circulate through the fire place (and flues of the same), of the  
room S and to impart heat substantially as  
100 described.

3. Also separating the lower fire-place from the hot air-chamber below it, for the  
purpose described, by means of a plate or  
slab B' as set forth.

In testimony that the foregoing is a true  
105 description of my said invention and improvements I have hereto set my signature this thirty-first day of January in the year  
eighteen hundred and forty two.

REUBEN MITCHELL.

Witnesses:

JOSEPH SMITH,  
JACOB COBURN.