D. P. WEEKS.

Hot-Air Furnace.

No. 12,080. Patented Dec. 12, 1854.

Fig. 5

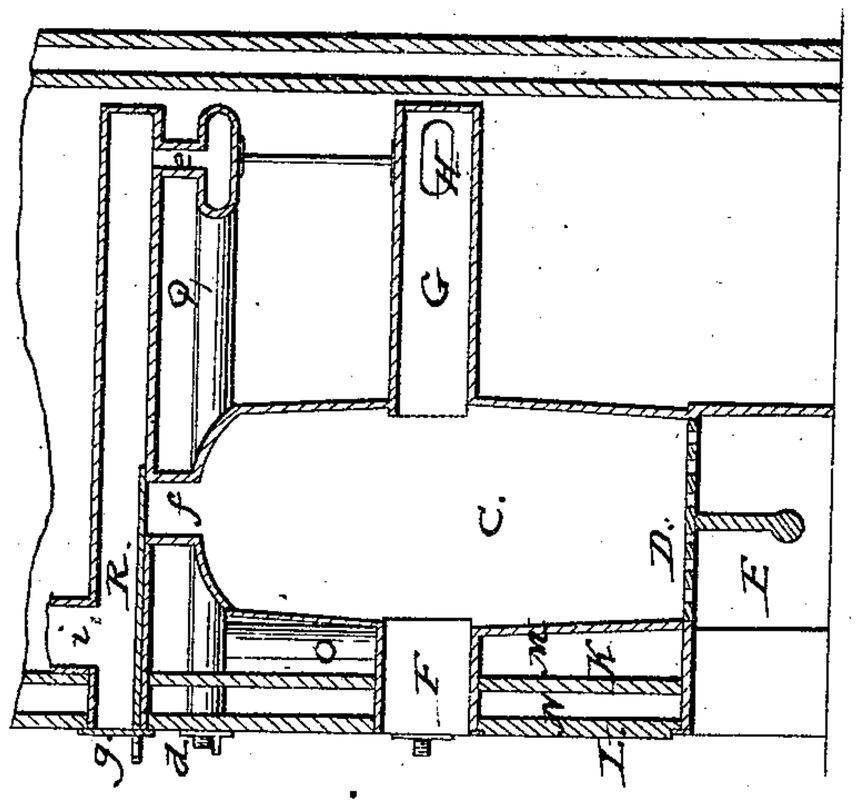


Fig. 4.

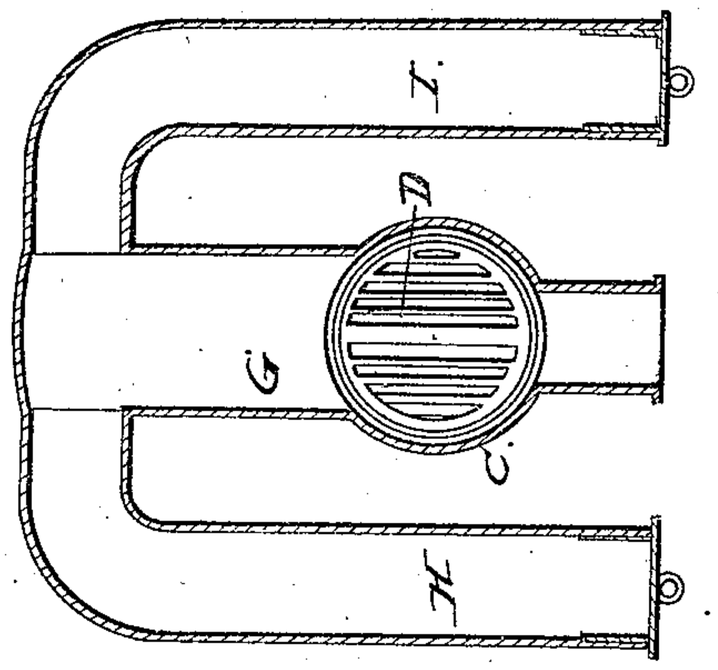


Fig. 3.

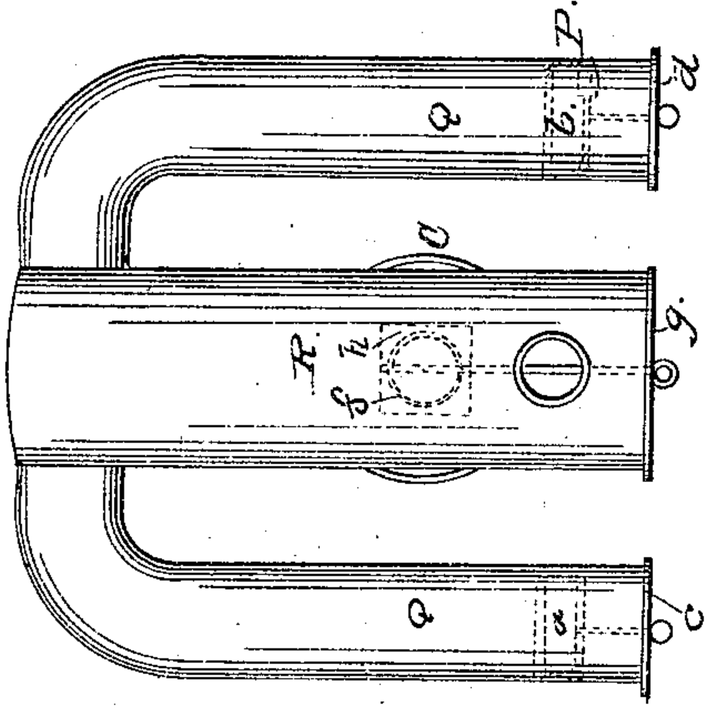


Fig. 2

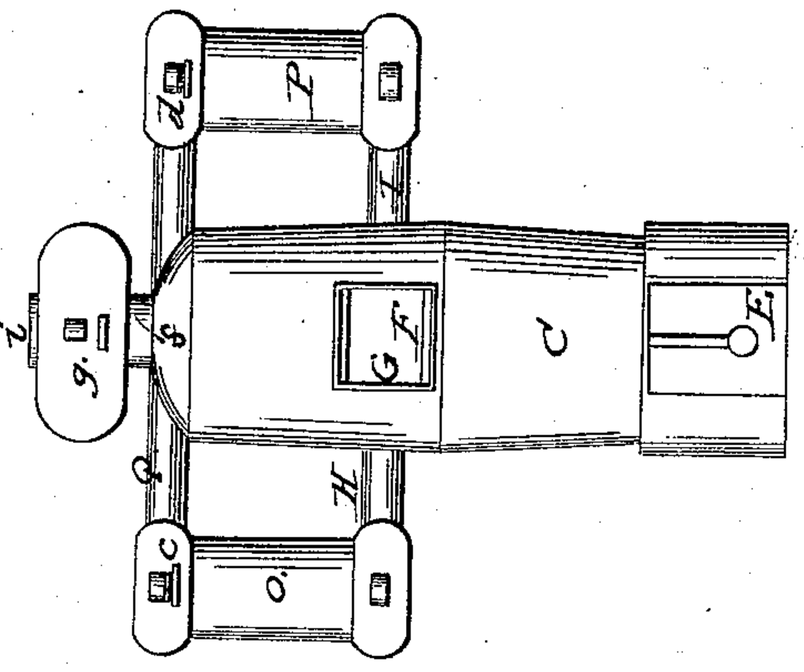
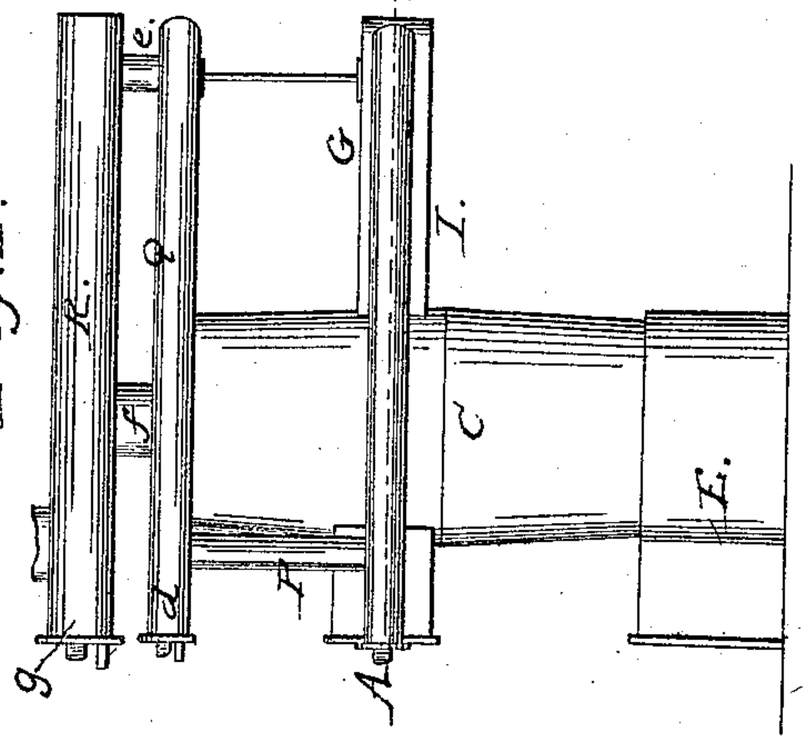


Fig. 1.



UNITED STATES PATENT OFFICE.

DANIEL P. WEEKS, OF MALDEN, MASSACHUSETTS.

HOT-AIR FURNACE.

Specification of Letters Patent No. 12,080, dated December 12, 1854.

To all whom it may concern:

Be it known that I, DANIEL P. WEEKS, of Malden, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Hot-Air Furnaces; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings Figure 1, denotes a side elevation of the fire-pot and radiating pipes of my invention. Fig. 2, is a front view. Fig. 3, a top view of the same. Fig. 4, is a horizontal section of it taken on line A, B, of Fig. 1. Fig. 5, is a vertical, central, and longitudinal section of it.

In the said drawings C, exhibits the fire-pot or chamber of combustion having a grate D, an ash-pit, E, and a throat, F, (for the supply of fuel) applied to it in the usual way. The rear part of this chamber is made to open into a horizontal extension or radiating chamber, G, which is disposed as seen in the drawings and has two flat horizontal pipes H, I, leading out of its opposite vertical sides and at or near its rear part. These flat pipes are curved and extended on the blanks of the fire pot and toward and through the front walls, K, L, of the chambers M, N, that inclose the fire pot, and are usually and respectively termed hot and cold air chambers, as the air to be heated is generally received into the outer chamber, N, and after descending through it is made to pass into the chamber M, where it is brought into contact with the heat radiators or receives heat by radiation from them. Vertical pipes, O, P, connect the two pipes H, I, near their front ends with another radiating pipe, Q, which is bent horizontally somewhat in the shape of the letter, U, and is arranged directly over the pipes, H, I, as seen in the drawings.

There is a damper or flue valve placed in each vertical pipe, O, and P, the same being represented by dotted lines at, *a*, and *b*. The two ends of the pipe, Q, extend through the front wall L, of the furnace and are supplied with movable doors, *c*, *d*; similar doors being applied to the outer ends of the pipes H, I.

Directly over the firepot, and the middle of the pipe, Q, is a return pipe, R, whose rear end is closed: This pipe, R, communicates with the middle of the pipe Q, by means of a short vertical pipe, *e*, and also with the fire pot, by a conducting pipe, *f*. The front end of the pipe, R, leads through the front wall of the cold air chamber and has a movable door, *g*. The conducting pipe, *f*, is provided with a sliding damper, *h*, by which the communication between the pipe R, and the fire-pot may be interrupted. A discharge pipe or flue, *i*, is led out of the top of the radiator pipe R, near its front end as seen in the drawings.

By the above construction, arrangement, and combination of the radiating pipes and chambers of a hot air furnace not only are their radiating surfaces brought into positions well calculated for the radiation of heat (such surfaces generally being horizontal) but the pipes composing the radiator are all situated so as to be capable of being readily cleaned or of having soot or ashes removed from them whenever the same may be necessary.

The extension chamber, G, placed at the back of the fire chamber receives and distributes to the side ducts leading out of it the flame and heat from the fire-pot, and it admits of an advantageous distribution of the fuel in combustion. That is to say, should we desire at any time to materially increase the radiating surface of the fuel, a portion of it while in combustion may be forced back from the fire-pot into the extended chamber so as to rest on its bottom, and permit the gaseous products of combustion proceeding from the remainder of the fuel or that in the fire pot to pass directly over it (the fuel in the extended chamber, G,) and thereby be burned to advantage while the extension of the coal, causes an increased amount of exposure of its heating surface, so that radiation of heat from it will be increased.

By means of the dampers, the smoke and volatile products of combustion may be made either to circulate through the radiating pipes or to escape directly through the discharge flue leading out of the top of the fire chamber.

What I claim is—

The combination and arrangement of the extended flame chamber, G, (leading out of the fire pot) the two sets of lateral horizontal radiator pipes, H, I, the connection pipes, O, P, the radiator pipe, Q, and the flue or pipe R, connected with the fire chamber and pipe, Q, as specified.

In testimony whereof I have hereunto set my signature this thirteenth day of January A. D. 1854.

DANIEL P. WEEKS.

Witnesses:
R. H. EIDY,
F. P. HALE, Jr.