

T. W. CHATFIELD.

Hot-Air Furnace.

No. 100,979.

Patented Mar. 22, 1870.

Fig. 1.

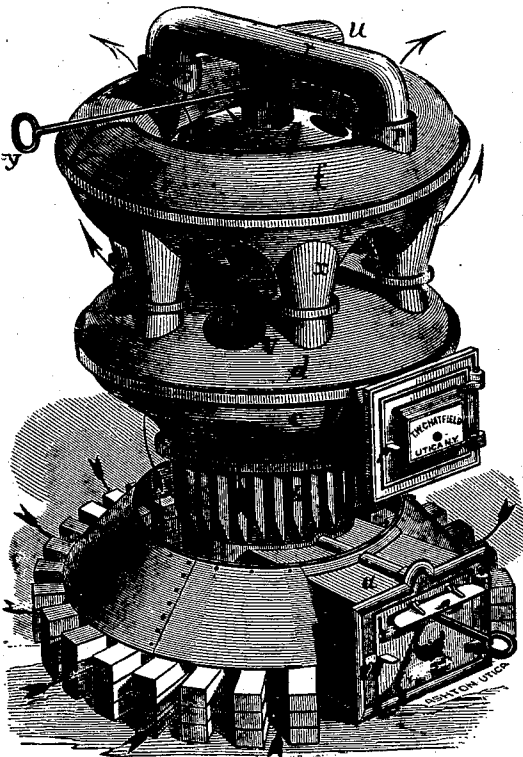


Fig. 4.

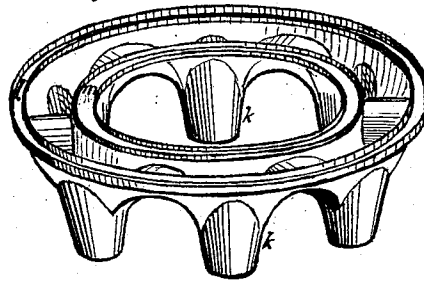


Fig. 3.

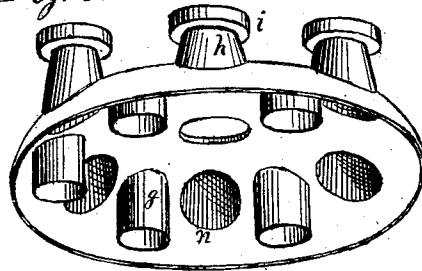
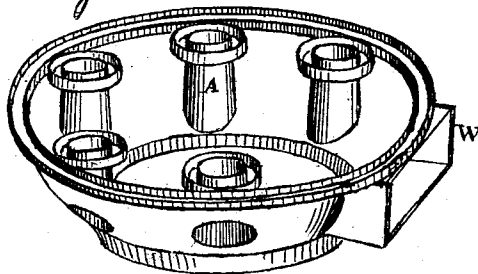


Fig. 2.



WITNESSES,

Wm Baker
Cooper Barling

INVENTOR.

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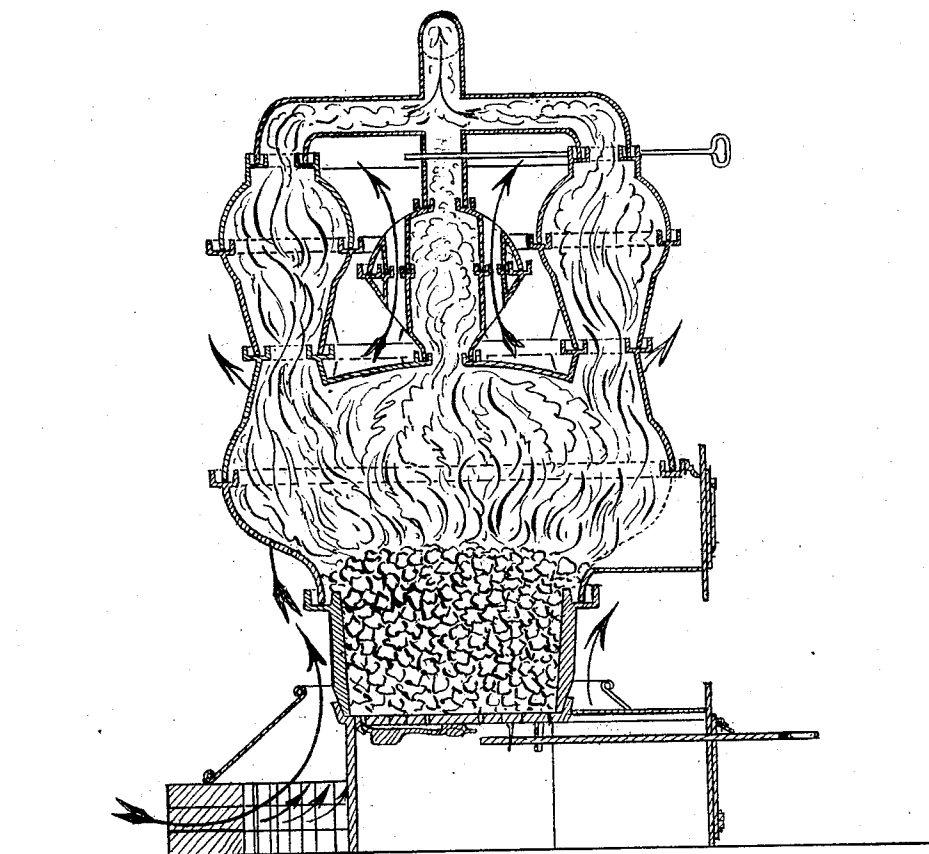


FIG. 5

WITNESSES.

Wm Baker
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United States Patent Office.

THOMAS W. CHATFIELD, OF UTICA, NEW YORK.

Letters Patent No. 100,979, dated March 22, 1870.

HOT-AIR FURNACE.

The Schedule referred to in these Letters Patent and making part of the same.

I, THOMAS W. CHATFIELD, of the city of Utica and State of New York, have invented certain Improvements in the Hot-Air Furnace, of which the following is a specification.

The purpose and intent of my invention is to increase the radiating-surface of the portion of the furnace situated above the fire-pot, and to improve the form, as well as the mode of construction of the same.

Figure 1 of the annexed drawings exhibits a vertical external elevation of my furnace.

A is the ash-pit.

b, the fire-pot.

c d and e f are heat-radiators.

The ash-pit and fire-pot are substantially the same as others heretofore made.

The heat-radiators are new in several respects. They are each cast perfect in two pieces, with projecting funnels matching each other when put together, so as to form connecting-pipes without the use of special connecting-pipes or intermediate collars. The lower portion of the connecting-pipes thus formed have circular sand trenches cast upon their tops to receive the upper portion of the tubes, making only one joint to each pipe, thus being more solid and secure, and less liable to leakage than where an intervening pipe or thimble is used.

The parts of the radiators c d and e f thus cast entire to match each other are shown in Figures 2, 3, and 4.

Fig. 2 represents the under part of the radiator c d, with the doorway u cast upon it.

Fig. 3 represents the upper part of the same radiator, and has the short cylindrical tubes g cast upon its under side, to set within the trenches at the tops of the tubes a, (fig. 2.) This part (fig. 3) has also cast upon its upper side the short tubes h, with circular trenches i on their tops to receive the short tubes k on the under side of fig. 4, forming passages for the fire and smoke.

The latter figure represents the under part e of the radiator e f, and has cast upon it the short tubes k, projecting from its under side to set into the circular sand trenches i in the part below it, and also the double circular trenches l and m for the reception of the corresponding circular edges on the under side of the upper part f.

The two radiators described being thus connected by the connecting-tubes thus formed, the fire and smoke pass from one radiator to the other.

The form of the upper part f of the radiator e f is clearly seen in fig. 1. The only short tubes used and cast upon it are shown at o p. These are for the reception of the complex tube r. This upper part f, like the other parts of the radiators, is oval in its shape, with the double circular edges on its under side corresponding to and fitting the circular

trenches l and m on the under half of this radiator, and leaving a free circular passage for the fire and smoke between the two parts.

There is also a smaller central radiator, q, standing upon a central funnel on the top of the radiator c d, as seen at s, and having a funnel at its apex, with a collar fitted for the reception of the short transverse tube t, connecting with the tube r. The fire and smoke therefore enter the tube r from the radiator e f at three points, o, p, and t, and issue into the smoke-pipe at u in the direction of the chimney.

The radiator c d, by means of the short connecting-tubes both in the upper and under parts thereof, as described, has air-passages v to increase the radiation. And the smaller central radiator q has also similar air-passages for the like purpose.

These air-passages are not new, and I do not now claim them.

The upper part f of the radiator e f, with the conductor r connected as described, is adjustable, and may be turned to the right or left at pleasure, so that, when the furnace is set in the desired position, the exit funnel u may be set for the smoke-pipe in the direction of the chimney or other issue for the smoke.

This triple connection of the tube r promotes the uniform and equable circulation of heat and radiation.

There is a damper, y, operating in the central tube t, in the usual manner. When this is closed, the circulation is thrown through the outside conductors o and p.

The annexed Figure 5 is a central vertical section of the complete furnace, designed to show the interior construction and circulation.

I claim as new—

1. The construction of the upper and lower parts of the radiators complete in two parts to match together, forming connecting-tubes without any additional connecting-pipe, as described.
2. The construction of the upper portion f of the radiator e f with two opposite outlets, o and p, into one common conductor, substantially as described.
3. The construction of the complex conductor r, to receive the issues from opposite sides of the radiator, and also from the central radiator, as described, with the funnel u for connection with the smoke-pipe, all in one piece, as described.
4. The construction of the conductor r, with its appendages and connections with the upper half of the radiator, so as to be adjustable in the manner described, and capable of presenting the outlet toward the chimney or other point of exit from any desired position of the furnace, as described.

THOMAS W. CHATFIELD.

Witnesses:

HENRY CHATFIELD,
LEANDER HARWOOD.