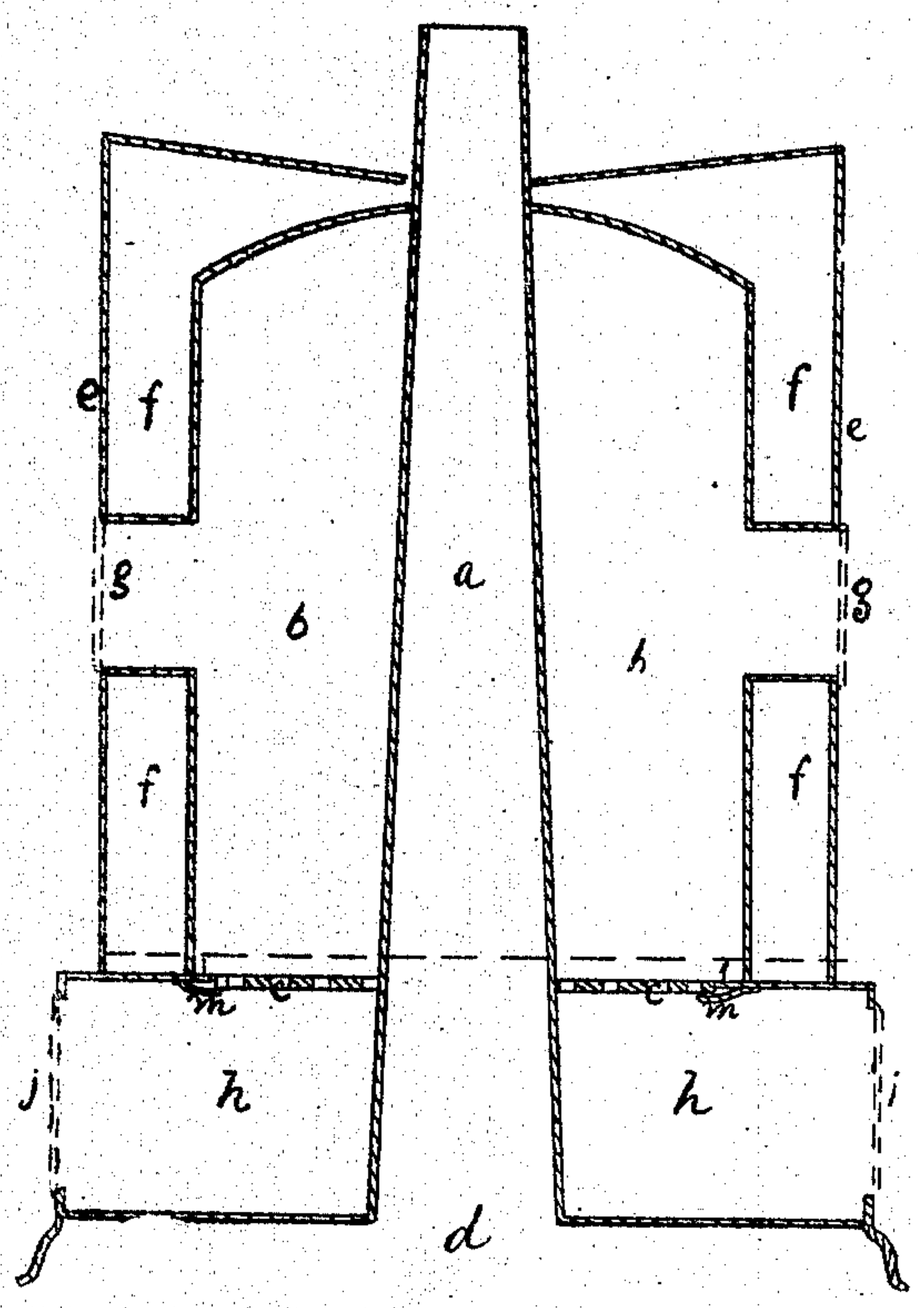
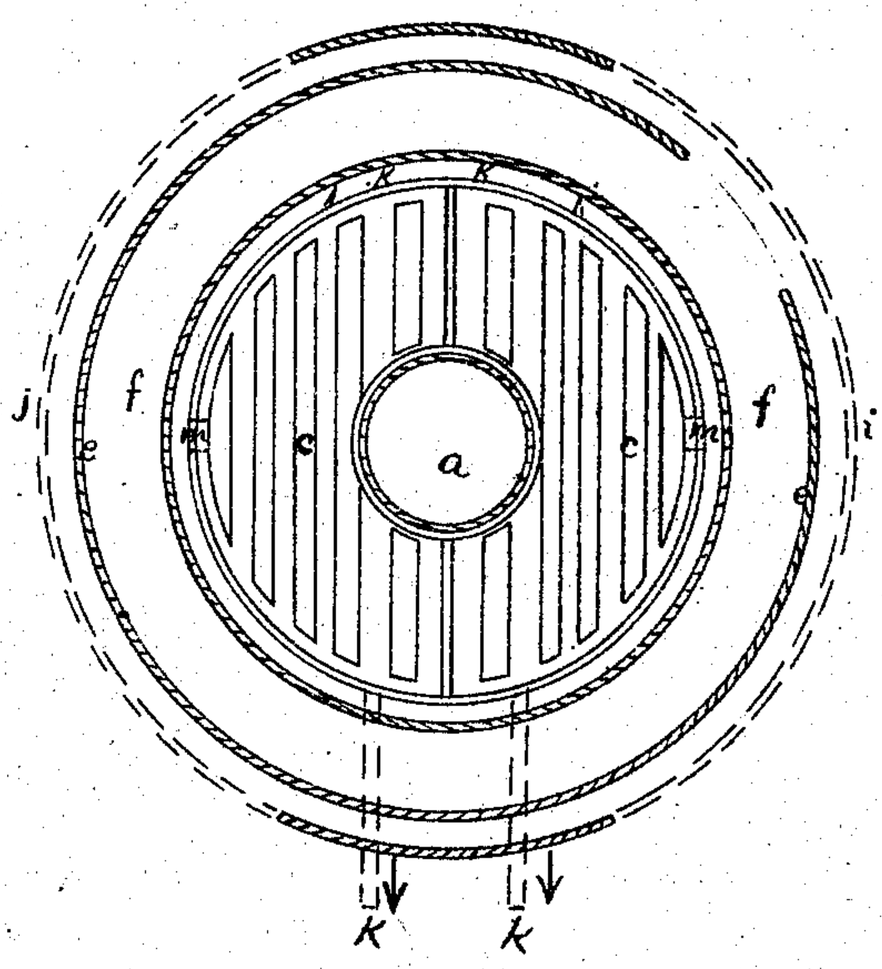
W. G. Googins.

Furnace.

No 75,748. Patented Mar. 24. 1868.





Witnesses
William H. Clifford
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WILLIAM C. GOOGINS, OF PORTLAND, MAINE.

Letters Patent No. 75,748, *dated March* 24, 1868; *antedated March* 18, 1868.

IMPROVEMENT IN HEATING-STOVES AND FURNACES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM C. GOOGINS, of Portland, in the county of Cumberland, and State of Maine, have invented a new and useful Improved Furnace and Stove; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others to make and use my invention, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows a vertical section of my invention.

Figure 2 is a transverse section of the same.

The object of my invention is the production of a heating-apparatus, by means of which heat may not only be thrown out into an apartment in which the heater may be placed, but also an increased quantity created, in order to be conducted into other apartments, in the manner in which rooms are commonly heated by furnaces, that is, conducted away from the heating-apparatus by means of tubes or pipes.

In furnaces of the ordinary construction, a fire-pot is generally placed in or near the centre, and this is surrounded at some distance by a metal casing or covering. Around this inner casing, and somewhat removed therefrom, is another. Between these two casings the air, being heated by the fire in the fire-pot, and thus rarefied, passes off through the proper tubes conducting to the rooms which the furnace is designed to warm. By such an arrangement, it will be understood that one side of the body of air thus employed is, while being heated, exposed to a comparatively cool surface of metal, to wit, the exterior casing or envelope of the furnace.

One object of my invention is to so arrange the construction of the furnace that a portion, at least, of the air heated by the fire in the furnace, shall be subjected to contact with no cooling influence whatsoever, while in the furnace, but shall be directly surrounded by the fire in the same.

To accomplish this, I pass directly through the furnace, from bottom to top, an air-tube, which admits the air at the bottom, and, as it becomes heated, leads it away from the furnace, after having been conducted through said tube, through the middle of the fire. *a*, in fig. 1, shows this central tube or air-passage, leading from the bottom to the top of the furnace, and prepared at the top to receive additional tubing or piping, to conduct the heated air further, as may be desired. *b* shows a cylindrical fire-pot, surrounding the central tube, and *c* shows the grates at the bottom thereof.

Thus it will be seen that the central air-tube *a* is entirely surrounded by the fire in the pot *b*, and that air, entering the tube at the bottom, *d*, is brought in contact with no cooling surface until it passes from within the furnace. This arrangement both increases the intensity of the heat, and, as a consequence, the power of the air rising therefrom to affect the temperature of distant apartments.

e shows the exterior envelope of the furnace, between which and the fire-pot *b* there is the space *f*, as is common, and from which pipes may lead in the ordinary manner. *g* shows the doors, which, for convenience, may be made upon opposite sides, as the fuel must be introduced all around the central tube *a*. *h* shows the ash-pit of the furnace, encircling the bottom of the air-tube *a*, in a manner similar to that in which the fire-pot *b* does the upper portions thereof. *i* shows the doors of the ash-pit. The grates *c* are semicircular in form, divided into two parts, which work separately, and may be tipped or turned upon pivots *k*, when it is desired to remove the contents of the fire-pot *b*. These grates are also supported at *m*.

By drawing out the handles or pivots *k*, somewhat in the direction of the arrows, the grates may be tipped up edgewise, but, when pushed back, the grates pass for a short distance under the rim 1 in the bottom of the fire-pot, and are then prevented from inclining or tipping.

The central tube *a* is especially convenient for the arrangement of a means of imparting the necessary degree of moisture to the air which is heated in it, for, by placing a dish, containing water, beneath the furnace under the lower aperture *d* of the central tube *a*, sufficient vapor will be created by the heat, and will be carried into the tube by the current of air.

It is apparent that various forms may be given to the tube *a*, but a conical shape is conceived to be the best admitting, as it does, a large quantity of air at the bottom.

I do not claim the tube *a* by itself, for it has been used before; neither do I claim the tube with a water-

tank underneath it, which tank is opened or closed by a valve operated by the entrance or exit of air, set forth in patent to J. Johnson, *et al.*, No. 12,758, April 24, 1855.

My invention has in view the creation of an increased amount of heat by the combination of the tube *a* and the common air-chambers *f*. It also presents increased convenience in loading, by reason of the doors *g*, and in cleansing, by reason of the semicircular grates *c*, ash-pit *h*, and doors *i*.

By this arrangement of the tube *a* and the common air-chambers *f*, increase of heat and economy of fuel may be attained.

Disclaiming the separate use of any of the devices above described, what I do claim, and desire to secure by Letters Patent, is—

The combination and arrangement of the tube *a*, air-chambers *f*, doors *g*, semicircular tipping-grates *c*, and ash-pit *h*, in a heating-furnace, substantially as and for the purpose set forth.

W. C. GOOGINS.

Witnesses:

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