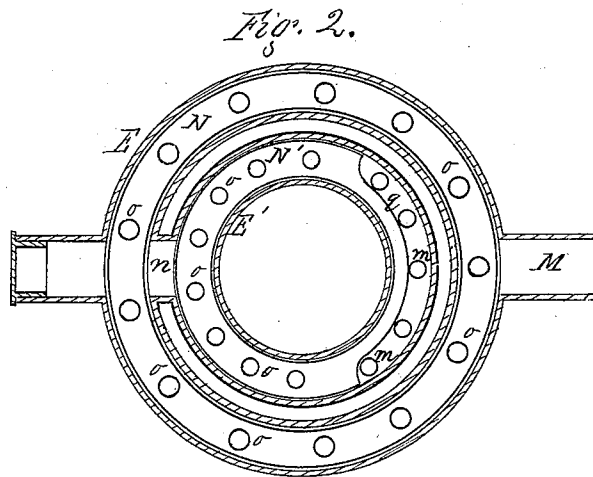
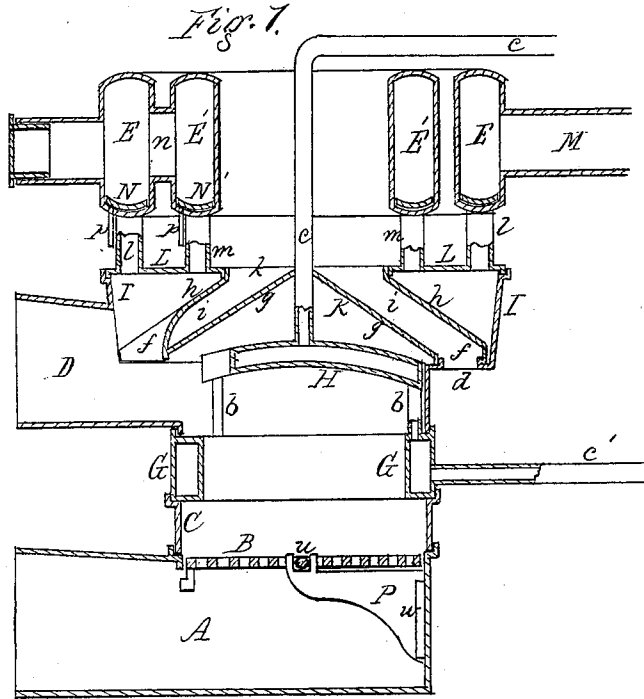


B. GOMMENGINGER.
Hot-Air Furnaces.

No. 150,236.

Patented April 28, 1874.



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And A. Halat.

Inventor.
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Fig. 3.

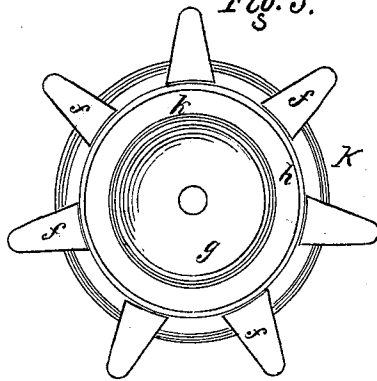


Fig. 4.

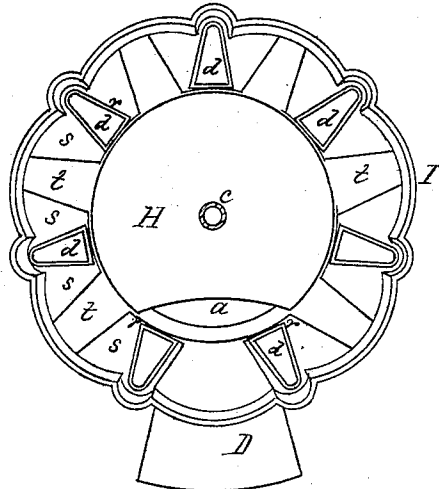


Fig. 5.

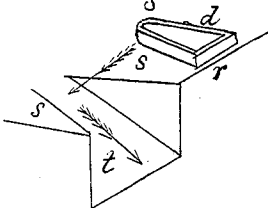


Fig. 6.

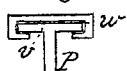
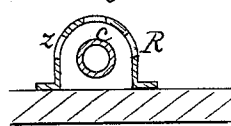


Fig. 7.



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UNITED STATES PATENT OFFICE.

BARTHOLOMEW GOMMENGINGER, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **150,236**, dated April 23, 1874; application filed April 30, 1873.

To all whom it may concern:

Be it known that I, BARTHOLOMEW GOMMENGINGER, of the city of Rochester, in the county of Monroe and State of New York, have invented new and certain useful Improvements in Hot-Air Furnaces; 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 had to the accompanying drawings.

My invention consists in the construction and arrangement of the furnace, as hereinafter described.

In the drawings, Figure 1 is a central vertical section of my improved furnace, with the outer casing or jacket removed from place; Fig. 2, a cross-section in the line *xx* of Fig. 1; Fig. 3, a plan of the air-conducting cone removed from place; Fig. 4, a plan of the body of the furnace with the upper parts removed; Fig. 5, a view in perspective, showing the inclined steps of the interior of the furnace, for the self-clearing of ashes; Fig. 6, a view of the connection for the grate-standard; Fig. 7, a view of the shield for the pipe.

A is the ash-pit, B the grate, C the fire-pot, D the coal-chute, and E the dome, which are similar to the corresponding parts in other furnaces, and do not require special description here. The furnace is also surrounded with the ordinary casing or jacket, (not shown in the drawings.) G is a hollow ring, which rests on top of the fire-pot and projects inward over the fire, as shown in Fig. 1. If desired, it may take the place of the fire-pot, resting directly over the grate, and, if desired, also, more than one ring may be employed, resting one on top of the other. H is a thin water-chamber, located over the fire-pot and over the ring or rings G, and occupying the whole cross-area of the furnace at that point, with the exception of a segment, *a*, Fig. 4, which is cut out to allow the passage of coal from the coal-chute D to the fire-pot; also, to allow the passage of the products of combustion. This water-chamber is made in concavo-convex form, and hollow, to contain the water. *b b b* are tubes, which connect the ring *g* with the water-chamber H and thereby allow a communication through. *c* is a distributing-pipe extending from the top of the water-chamber; and *c'* is a return-pipe,

opening into the ring G at a suitable point. These pipes may be carried through a church, hall, house or any other building, and suitably connected, by which means a constant circulation of hot water is kept up, passing from ring G, through pipes *b b*, chamber H, thence passing, through distributing-pipe *c*, through the building, and then returning by the return-pipe *c'* to the hollow ring again. This heating by hot water is in addition to the ordinary functions of the furnace of heating by hot air. I is the body of the furnace. It is made of larger diameter than the lower portion, and has a series of ports or air-passages, *d d*, Figs. 1 and 4, which open into the hot-air space outside the furnace. K is the air-cone, which fits within the body and has flues *f f*, which cover the ports *d d*. The air-cone consists of the cone proper *g*, which receives the heat on the under side, and a jacket, *h*, which covers the cone proper, leaving a space, *i*, between, through which the air that enters from ports *d d* can be diffused, and thereby receive the best benefit of the heat beneath. A central opening, *k*, is left in the top of the air-cone, which allows the heated air to pass up through and around the dome E E', where it becomes more highly heated. L is a top-plate to the body of the furnace, and covering the whole surface, with the exception of the central opening *k*. *l l* and *m m* are a series of flues connecting the top plate L with the bottoms of the two hollow drums or rings E E', which constitute the dome. These flues are arranged in a circle, one series within the other, and simply serve to conduct the gases and products of combustion from the body of the furnace to the dome, whence they are conducted off by the ordinary exit-pipe M. The drums E E', forming the dome, are distinct from each other, with the exception of a flue, *n*, which connects them on the side opposite from the exit-pipe M. In the bottom of each of the drums is a series of holes, which come in line with the flues *l l* and *m m*. In the bottom of each drum is also a ring-register, N N', having corresponding holes *o o*. When these rings are turned so as to coincide with the holes in the bottoms of the drums, a draft will be produced through; but when turned out of coincidence, then the draft will be cut off. Therefore, when the ring-

register N is turned to cut off the draft in drum E, the draft can only enter into the inner drum E', and, thence passing around, it must escape through flue *n* into the outer drum, and thence pass around in the latter till it reaches the exit-pipe M. The draft is thus made indirect, by which a greater amount of heat is attained. The ring-registers are operated by stems *p p*. The rear part of the inner register N' is preferably cut away, as shown at *q*, sufficiently to allow the draft to operate constantly to a desired extent, and not cut it off entirely. By means of these registers in the two drums the draft may be governed exactly as desired, and they also are self-clearing from ashes, by stirring them up and sifting them down through the flues *l m*.

To increase the self-clearing of the drums I make the top and bottom of the drums E E' of the concavo-convex form shown, by which means the ashes center in the grooves at the bottom, and fall through the holes.

The top of the body I is made of the scalloped form shown in Fig. 4. The interior is provided with elevated seats *r r*, which fit close to the periphery of the water-chamber H and hold the ports *d d*. The top of each seat is made in an inclined plane, *s*, on each side, Fig. 5. Beneath each of these inclined planes is another one, *t*, which runs at right angles, or radially toward the center. The object of this arrangement is to make the interior of the furnace self-clearing from ashes. The seats *r r* furnish the necessary horizontal bearings for the ports *d d*, and such ashes as fall thereon pass down over the inclined planes *s t*, and drop into the fire-pot. No accumulation of ashes can ever occur. This forms one feature of my invention.

The grate B rests in a fork, *u*, of a standard, P. The standard has a flange, *v*, which slides up and down in lugs *w* of the ash-pit. By this

means the standard may be drawn out or removed at any time. This is an advantage in putting up the furnace, and also in replacing the parts when burned out.

The pipes which carry the water through the buildings are covered by a half-circular shield, R, as shown in Fig. 7. This shield is simply bolted to the floor, and is made with perforations or open work Z, to allow the passage of the heated air through. It serves as a shield to any contact with the pipes, and presents an ornamental appearance.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The body I of the furnace, constructed with the elevated seats *r r* and the inclined planes *s t*, lying at right angles to each other and employed for rendering the interior of the furnace self-clearing from ashes, as herein shown and described.

2. In combination with the seats *r r*, provided with the ports *d d*, the air-cone K, constructed with the flues *f f*, cone *g*, and jacket *h*, and employed intermediately between the water-chamber H and top plate L, as and for the purpose specified.

3. The combination of the two drums E E', arranged one within the other, and united by the flue *n* and the two ring-registers N N' resting in the bottom of said drums, the bottoms of said drums and the rings being made of concave form to discharge ashes, and the inner ring being cut away on one side to allow continuous draft, as shown and described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

B. GOMMENGINGER.

Witnesses:

R. F. OSGOOD,
W. A. LODER.