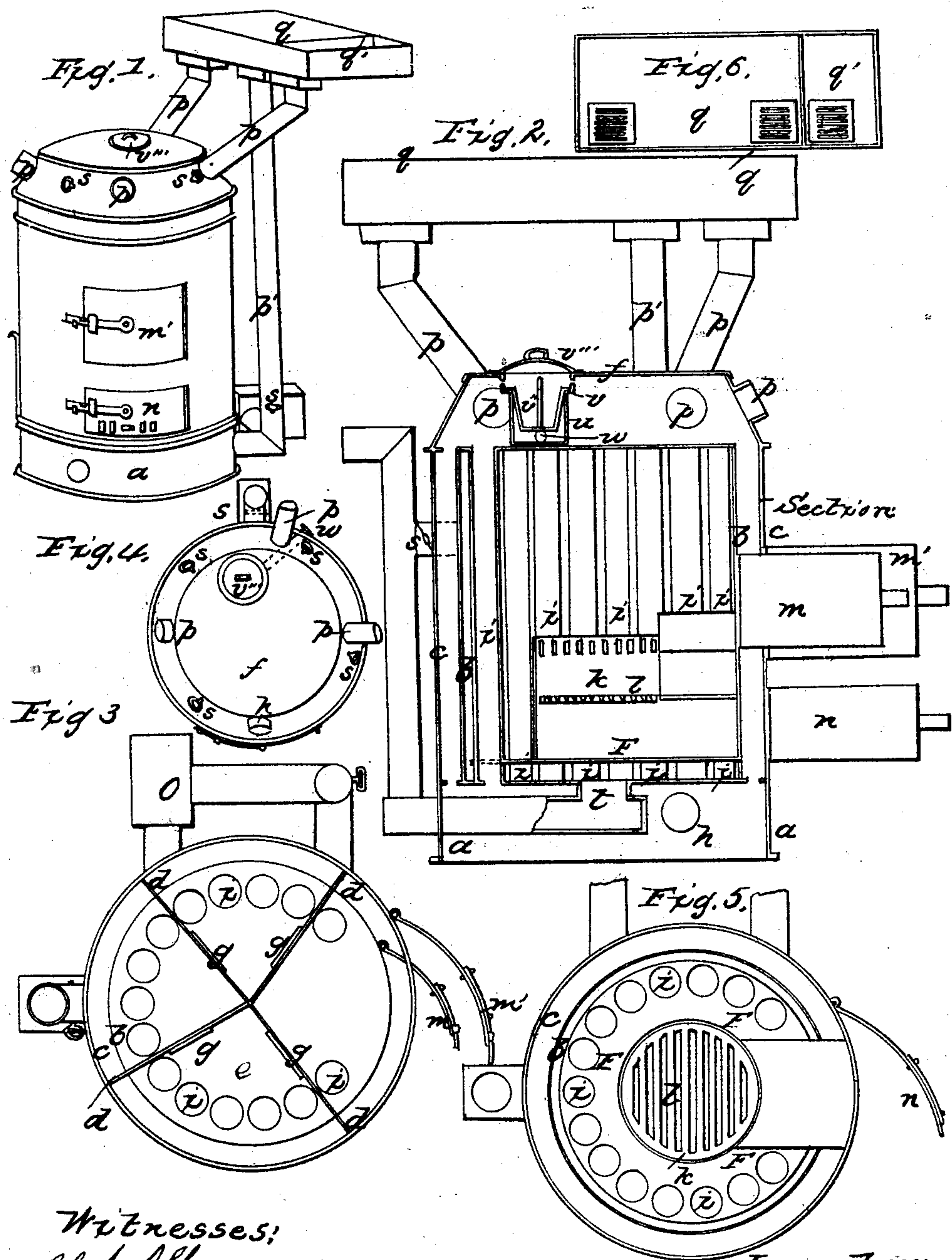


E. WEBSTER.
Hot Air Furnace.

No. 55,564.

Patented June 12, 1866.



Witnesses:
Chas Allen
Jas W Bliss

Inventor:
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UNITED STATES PATENT OFFICE.

EDWARD WEBSTER, OF HARTFORD, CONNECTICUT.

HOT-AIR FURNACE.

Specification forming part of Letters Patent No. 55,564, dated June 12, 1866.

To all whom it may concern:

Be it known that I, EDWARD WEBSTER, of the city and county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Furnaces or Stoves; and I do hereby declare that I believe the same to be fully described and represented in the following specification and drawings.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same by referring to the drawings, in which the same letters indicate like parts in each of the figures.

The nature of this invention will be understood from the specification and drawings. The object desired to be attained thereby is to produce the greatest amount of heat, perfect ventilation, and free circulation of heated or cold air in rooms or apartments of a building.

In the accompanying drawings, Figure 1 is a front elevation, showing its external appearance. Fig. 2 is a sectional side elevation. Fig. 3 is a plan view cut through the partitions *d* and dampers *g*, just above the upper ends of the air-tubes *i*. Fig. 4 is a top view. Fig. 5 is a partial section view, cut just above the grate *f*. Fig. 6 is a plan representing the rooms, halls, &c., to be heated.

a is the base or air-chamber of the stove or furnace. *b* is the inside cylinder. *c* is the outside cylinder. The space between these two walls or cylinders is divided into four parts, more or less, from top to bottom, by partitions *d*. The lower ends of each of these cylinders rest upon or form a part of the base *a*. The upper end of the inside and outside cylinders, *c b*, are closed by the heads *e f*, so that the air may have a free upward passage through the inside of the tubes *i* and between the two cylinders *c b*. The partitions *d* divide the space into four, more or less, points, as may be desirable, between the inner and outer surface of the cylinders *c b*, and continue along over the top between the plates *e f*, and unite at the center of the furnace, thus dividing the inside of the furnace into two distinct apartments—one for smoke, gas, &c., and one for circulation, air, heat, &c. The dampers *g* are arranged in said partitions *d* between the plates *e f*, so that when they are closed the air ascending will be divided into four or more currents,

as desirable, and conducted to apartments in the usual way.

h is an air-chamber in the base *a*, used when the air is introduced from out-doors.

i are air-tubes, the lower ends of which pass through the plate *j* into and made tight in the top plate of the air-chamber *e*, so that the air may pass freely from chamber *h* upward through the tubes *i*, the outer surfaces of which are exposed on all sides to the heat of the furnace. The upper ends are secured into the head *e*.

j is a metal sheet made a little smaller than the inside diameter of the inside cylinder, *f*, for the purpose of allowing exit-passage of smoke, &c., under its lower surface. This plate *j* is perforated near its outer edge, through which the pipes *i* pass to the bottom plate of the furnace or top of the air-chamber *h*, and is arranged a short distance above said plate, more or less, as desirable, thus causing the heat to diffuse itself equally over the whole surface of the cylinder and tubes before it escapes from the stove or furnace, which can only be done by passing between the edge of the plate *j* and the side of the cylinder *b* into the funnel *t*, thence through the exit-pipe in the usual way.

k is a fire-pot arranged in the center of the stove or furnace and made in the usual way.

l is the grate, also made and secured in the common way.

m is a door which opens into the fire-pot through the inner cylinder, *b*.

m' is a door in the outer cylinder, *c*, directly in front of the door *m*; but in the manufacture of this stove or furnace I propose to use a frame which will close up the passage around the door-openings *m m'* between the two cylinders leading to the fire-pot, and thus use but one door.

n is a door which opens to the ash-box directly under the grate.

o represents a box or pipe through which the air is introduced into the chamber *h* of the furnace.

p are openings through which the hot air is communicated to the different apartments.

p' is a pipe designed to conduct the air from the apartments back into the chamber *h*, and is especially designed for ventilating apartments by the displacement of impure air with fresh warm air,

s are dampers or valves arranged in the pipes at different points for the purpose of directing the course of the smoke, gas, or air, in the usual way, either when heated or cold.

r are air-passages formed in the bottom plate, *j*, of the stove or furnace near its outer edge, to allow air to circulate or ascend between the inner and outer cylinders, *e f.*

t is the outlet or funnel through which the gas and smoke passes from the furnace, and is formed in the center of the cylinder through the top plate of the chamber *h*.

Now, it will be seen that the air enters the chamber *h* through the pipe *o* and passes up through the tubes *i* and passages *r* to the upper part of the furnace, and thence, through the pipes *p*, into the apartments, as desired, by simply turning or opening the requisite valve therefor. The fire is made in the fire-pot in the usual way. The heat therefrom diffuses itself around the air-tubes and the surface of the cylinder, its exit-draft being confined to a downward course around the edge of the plate *j* into the central exit-pipe, *t*, in the center of the furnace, as before described. The heat will be exhausted, or nearly so, upon the air-tubes and cylinder surface before it leaves the stove or furnace.

u is a case formed in the top of the furnace, provided with a flange, *v*, and openings *v'*, to allow the vapor to pass off and mingle with air in its passage to the apartments.

v'' is the evaporating-dish placed inside of the case *u*, and rests upon the flange *v*.

v''' is a cover which prevents the outward escape of vapor from the evaporating-dish *v''*.

w is a sliding air-tube which enters the bottom of the case *u* through the side of the furnace and is provided with a perforation in its side, near its outer end, through which air may be admitted into said case, to increase or check evaporation, by moving said pipe out or in.

Now, it will be seen that by making the fire and admitting the air in the furnace in the usual way, the heat therefrom, in consequence of the plate *j* and the arrangement of the exit-flange *t*, will be more widely diffused and exhausted upon the internal surface of the cylinder and the external surface of the air-pipes.

I have thus endeavored to show the nature, construction, and advantage of this improvement, so as to enable others skilled to make and use the same.

What I claim, therefore, and desire to secure by Letters Patent, is—

1. The employment of the plate *j*, in combination with the arrangement of the exit flange or pipe *t*, substantially as and for the purpose described.

2. The case *u*, constructed as described, in combination with the dish *v''*, tube *w*, and cover *v'''*, substantially as and for the purpose described.

EDWARD WEBSTER. [L. S.]

Witnesses:

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