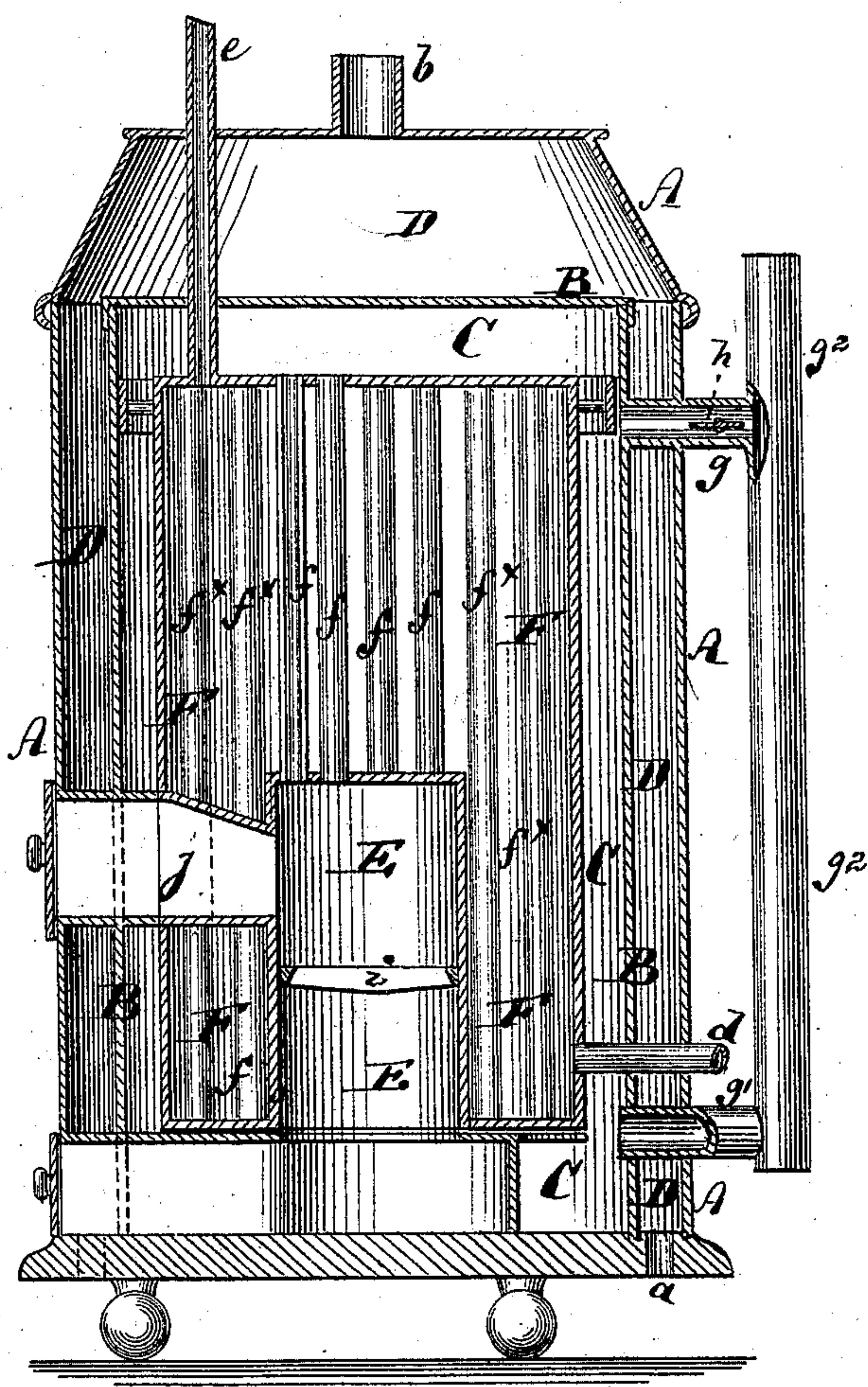


C. COMSTOCK.

Combined Hot-Air and Hot-Water Furnaces.

No. 150,750.

Patented May 12, 1874.



Witnesses.

John Becker  
Fred Haynes

Chester Comstock  
by his Attorneys  
Brown & Allen



# UNITED STATES PATENT OFFICE.

CHESTER COMSTOCK, OF NEW CANAAN, CONNECTICUT.

## IMPROVEMENT IN COMBINED HOT-AIR AND HOT-WATER FURNACES.

Specification forming part of Letters Patent No. 150,750, dated May 12, 1874; application filed November 1, 1873.

*To all whom it may concern:*

Be it known that I, CHESTER COMSTOCK, of New Canaan, in the county of Fairfield and State of Connecticut, have invented a Combined Hot-Air and Hot-Water Furnace, of which the following is a specification:

The drawing represents a vertical central section of my combined hot-air and hot-water furnace.

The heating of improperly ventilated buildings is always imperfect, inasmuch as heated impure air tends more to generate disease and to offend the senses than cold air, and as also by the absence of ventilation the upper stratum only of the air contained in a room will be warmed, while the lower stratum will not be properly reached by the heating apparatus, except at a great outlay of fuel.

My invention has for its object to produce in one furnace means for heating and also for ventilating buildings—in fact, to combine in one apparatus a hot-air and a hot-water furnace, so that the hot air may be used for ventilating the building and displacing the cold impure air, while the hot water or steam will be used to warm the air in the room, the admission of the warm air into the rooms being only for the purpose of taking off the chill of the replacing air, and preventing it from entering the rooms in too cool a state, there to be heated.

My object is attained by combining in one furnace a water-heater or steam-generator and a hot-air chamber, and by combining, therefore, in one furnace, the three pipes for taking away the products of its operation—to wit, the smoke-pipe, the hot-air pipe, and the hot-water or steam pipe.

In the accompanying drawing, the letter A represents the outer shell of my improved furnace. B is an inner shell, placed within A, and having within it a smoke-chamber, C, while between A and B an air-chamber, D, is

produced. This air-chamber is supplied with fresh air at the lower end through openings *a* in the bottom of the furnace, and discharges the air in a heated condition through a pipe, *b*, at the top, in which pipe the air is taken to the place required. The fire-place E is formed within the chamber C, and in this instance beneath and embraced by a water-receptacle, F, which receives its supply of water at the lower end of a pipe, *d*, or by other means, and discharges its hot water or steam from the top through a pipe, *e*. *f f*<sup>x</sup> extend through the length of the hot-water chamber F into the upper smoke-department C.

The smoke from the fire passes up through the inner pipes *f*, and escapes through the upper branch *g* of the smoke-flue. If the damper *h* in such branch is closed, the smoke passes up in the center pipes *f*, then down again through the outer series *f*<sup>x</sup> of pipes in the chamber F, and down also in the smoke-space C, that surrounds the chamber F, and out through the lower branch *g*<sup>1</sup> of the smoke-pipe *g*<sup>2</sup>, thus entirely surrounding the chamber F and economizing heat. Fuel is fed to the grate *i* through an opening, *j*, that extends through the shells A B, and through the front part of the water-chamber F, as indicated.

As to the construction of the water-chamber or steam-generator F, I do not confine myself to its precise arrangement or shape, although I prefer to arrange it in an annular form around and in a cylindrical form above the fire-place E. Neither do I confine myself to any particular shape or size of the shells A B.

I claim as my invention—

The hot-water chamber F, provided with the pipes *f f*<sup>x</sup>, and combined with the fire-place E, shells B A, and smoke-pipes *g g*<sup>1 g</sup><sup>2</sup>, substantially as described.

Witnesses: CHESTER COMSTOCK.

H. B. ROGERS,

STEPHEN A. DODGE, Jr.