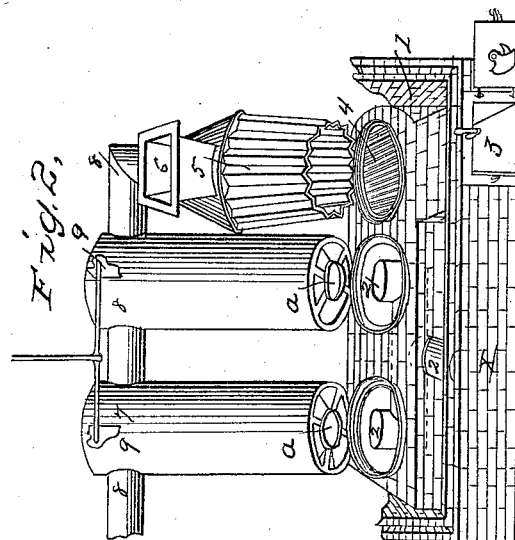
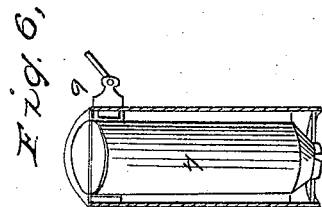
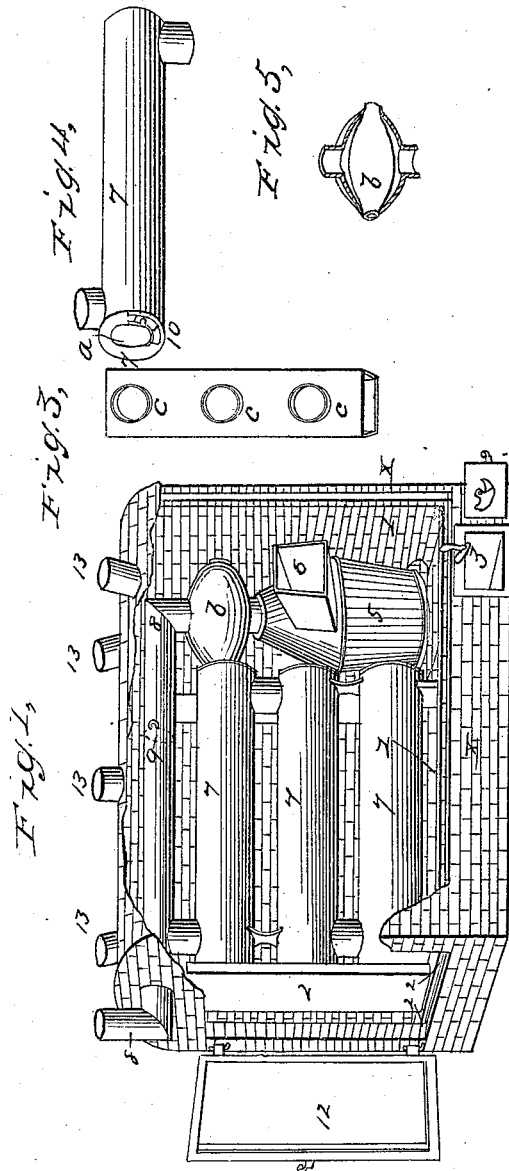


J. B. MORRIS.
Hot Air Furnace.

No. 4,689.

Patented Aug. 12, 1846.



UNITED STATES PATENT OFFICE.

JOSEPH R. MORRIS, OF NEW HAVEN, CONNECTICUT.

HOT-AIR FURNACE.

Specification of Letters Patent No. 4,689, dated August 12, 1846.

To all whom it may concern:

Be it known that I, JOSEPH R. MORRIS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful improvement in the form and construction of hot-air furnaces and their appendages for heating or warming buildings, consisting of a cast-iron furnace incased within a double wall and connected with concentric radiators receiving cold air from the inner chamber of the hollow or double incasement and discharging the same heated as it passes through the inner pipes or tubes of the concentric radiators into the furnace-chamber of hot air for distribution through the building; and I do hereby declare that the following is a full and exact description thereof, observing that the nature and object of the invention and improvement is to increase the radiating surface of the furnace and its appendages in diffusing its heat to the air entering and while in the hot-air chamber of the furnace.

To enable others skilled in the art to make and use my invention and improvement I now describe its construction and operation and the several modes in which I have contemplated the application of the principle, referring for further illustration to the drawings accompanying this specification as part thereof.

View No. I is an inside view of the furnace chamber with its appendages, the concentric tubes being placed horizontally. View II exhibits the same principle with radiators placed perpendicularly in the furnace chamber.

Figure 1 in each view represents the walls of the furnace chamber, being a double wall or incasement of brick leaving a hollow space between the walls to receive the cold air from without. Fig. 2 in both views represents an inner case or conductor of sheet metal which receives the air from the chamber or space within the double wall near the bottom and communicates it to the center tube of the concentric radiators, through which it passes into the hot air chamber. Fig. 3 exhibits the ash pit in each. Fig. 4 the grate. Fig. 5 the fluted cast-iron furnace. Fig. 6 the feeding mouth through

the wall. Fig. 7 in both views represents concentric radiators, with collars on the ends leaving open the center tubes. Fig. 8 in both, smoke pipes. Fig. 9 in both, dampers. Fig. 10 in View IV represents a slide removed to clean the space between the tubes. Fig. 11 in View II represents an open space to receive the dirt and dust from the radiators which may fall without effort. Fig. 12 in View I, a door entrance into the furnace chamber, to set up or repair the appendages. Fig. 13 represents conductors of hot air from the hot air chamber.

The operation of this furnace is as follows: When the horizontal tubes are used, everything being in place and the chamber closed except for the admission of air from without through the space between the incasement walls and fire being kindled in the furnace, the fumes pass off in a direct draft through the upper smoke pipe 8 until the damper in that smoke pipe is closed, when the fumes will turn down in the perpendicular pipe 8 to the lower concentric tubes 7, will pass through that around the inner tube inclosed, and thence upward to the next 7 and through that in like manner and up and through the top tube 7 and thence into the smoke pipe to be discharged, communicating as they pass, their heat to the air passing through the tubes or radiators in the center of them. The air thus treated is conveyed into any department of the building, to be warmed by pipes from the conductors, Figs. 12 and 13, &c. A similar result mutatis mutandis, will follow the use of perpendicular concentric radiators, and either method will yield a more perfect diffusion of the heat than any method now in use and at less expense.

I claim—

1. I claim as my invention and improvement a cast iron furnace in combination with concentric radiators, surrounded and inclosed by a double and hollow wall and receiving the air from without through the hollow of the incasement and discharging the same heated, as it passes through the inner radiators into the furnace chamber for distribution, thus bringing it in contact with more radiating surface than any other

within the same space, substantially in the manner specified above.

2. I also claim the method of cleaning the horizontal radiators by removing the slide
5 and thus opening them for that purpose without taking them down.

3. I also claim that the perpendicular radiators made in the manner specified will

not need the operation of cleaning, as they will drop and discharge what is usually to 10 be removed.

JOSEPH R. MORRIS.

Witnesses:

SIMEON BALDWIN,
CHAS. A. JOHNSON.