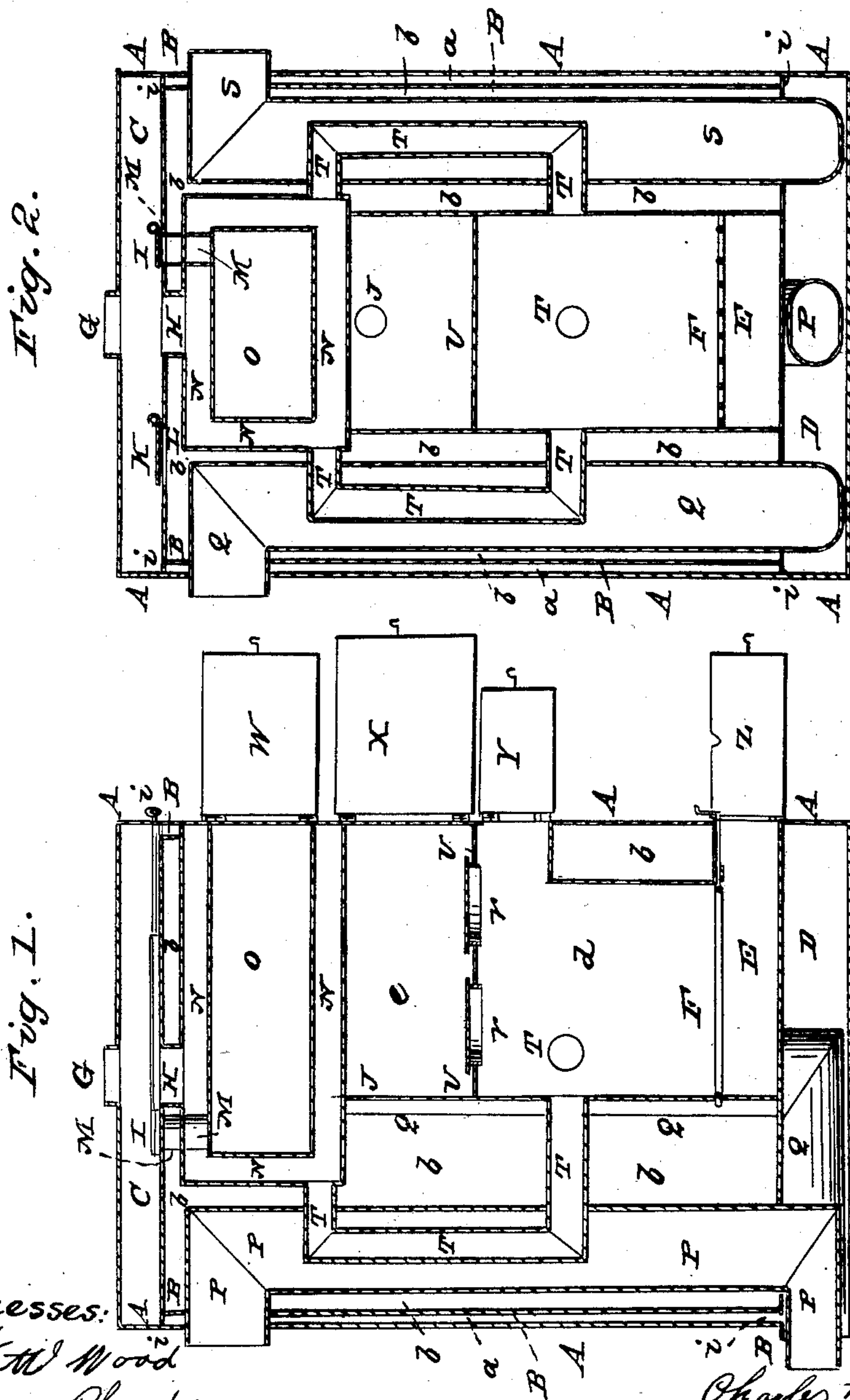


Hot Air Furnace.

No. 24,581.

Patented June 28, 1859.



Witnesses:

Nath Wood
Abel Phurston

Inventor.

Charles B. Sawyer

UNITED STATES PATENT OFFICE.

CHARLES B. SAWYER, OF FITCHBURG, MASSACHUSETTS.

APPARATUS FOR HEATING, COOKING, AND VENTILATING.

Specification of Letters Patent No. 24,581, dated June 28, 1859.

To all whom it may concern:

Be it known that I, CHARLES B. SAWYER, of Fitchburg, Worcester county, Commonwealth of Massachusetts, have invented an
5 Improvement in a Combined Furnace, Range, and Ventilator; and I do hereby declare that the following is a full and exact description of its construction and operation, reference being had to the accompanying
10 drawings and to the letters of reference marked thereon, so as to enable others skilled in the art to make and use my device.

The two figures of the accompanying drawings represent vertical sections through
15 the center of a furnace constructed on my improved plan, the two sections being taken at right angles to each other.

The furnace is surrounded by two concentric metal cylinders A, B, the cylinder B, being of smaller diameter than the cylinder A, so as to leave a hollow space *a*, between the two cylinders which serves partially as a nonconductor of heat in regard to the
20 warm air inside of cylinder B, and partially as a ventilator as will hereafter be explained. Two chambers C, and D, are arranged one on top of and the other below the double cylinder A B. The space *b*, within the cylinder B, contains the oven O,
30 range *e*, firepot *d*, and ashpit E, one above the other and each provided with suitable doors W, X, Y, Z.

The ashpit, firepot and range are surrounded with a single thickness of metal,
35 while the oven is constructed with a double inclosure so as to form a hollow space N, all around the oven except where the door W, is. A pipe M, leads from the inside of the oven into the upper ventilating chamber C, and is provided with a damper I. The hollow space N, around the oven communicates
40 through the pipe H, with the ventilating chamber C, from which latter a pipe G, leads into the chimney. The ventilating chamber C, is provided with a damper K,
45 covering an opening L, in the bottom of the chamber C.

Three or more warm air pipes P, Q, S, are arranged around the fire pot, range, and
50 oven, and inside of the cylinder B. Their upper ends pass through the double wall A B, of the furnace and into the rooms to be heated by the furnace. Their lower ends pass through the bottom of the furnace into
55 and through the ventilating chamber D, out into the fresh air. Fire flues T, one to each

of the warm air pipes P, Q, S, pass from the fire pot into and through the warm air pipes into the hollow space N, around the oven O.

The range *e*, the bottom U of which is provided with suitable holes V, for the insertion of cooking utensils, communicates with the hot air space *b*, by means of a hole J, in the rear wall of the range. A series of little holes *i*, are arranged in the top and
60 bottom plate of the furnace so as to open a communication between the lower and the upper ventilating chamber through the hollow space *a*, between the two cylinders A, B. It will be seen that the warm air pipes
70 P, Q, S, are entirely independent of each other and open each into the outside air at R.

F, is the grate in the bottom of the firepot.

The operation of this combined furnace, range, and ventilator, is as follows. The
75 damper K, being closed and the fire in the firepot being started, the air in the space *b*, surrounding the firepot, range, oven, and pipes P, S, Q, will be heated in consequence
80 of its contact with the wall of the firepot. This volume of heated air which can not escape as long as the damper K, is kept closed, keeps the air warm in the pipes P, S, Q, and in the hollow space N, around the
85 oven—the range *e*, at the same time assisting to heat the air, inasmuch as the air in the chamber or space *b*, communicates with the air in the range *e*, through the holes J. But the air in the pipes P, Q, S, and in the
90 space N, is more directly heated by means of the fire flues T, which pass from the firepot *d*, through the pipes P, Q, S, into the space N. The draft necessary to keep up the fire is produced by the communication
95 of the fire pot with the chimney G, through the fire flues T, space N, pipe H, and chamber C, the door Z, of the ashpit or a suitable damper in said door being kept open, for the purpose of admitting air to the fire.
100 When the temperature in the oven O, becomes too high the damper I, may be opened so as to allow the heat to escape into the chimney. When it is desired to lower the temperature of the air in the pipes P, Q, S,
105 (which serves to heat the rooms) the damper K, may be opened so as to draw off the hot air from the space *b*. Pipes lead from openings in the floors of the rooms into the ventilating chamber D, and the vitiated air
110 passes from the rooms through said pipes into the chamber D, and up through the

lower holes *i*, and through the space *a*, through the upper holes *i*, and through the upper ventilating chamber C, into the chimney at G.

5 The advantages of the above described combined furnace, range, and ventilator consist first in the fact that the heat of one fire is made to serve the threefold purpose of heating the rooms, cooking, and creating a
10 thorough ventilation. Another advantage of my device is that the warm air pipes communicating with the rooms open separately into the outside air so that they can not draw from each other whenever the
15 draft in either one of them is greater than in the others which would be the case if they terminated in the cold air chamber D, common to them all. Finally the chamber D, which has heretofore only been used as
20 a cold air chamber, is here made to serve the purpose of a ventilating chamber. It will also be observed that by means of the

dampers and flues connected with the range and oven all vapors arising from the process of cooking are conveyed at once to the
25 chimney and are therefore prevented from mixing with the air by which the rooms are warmed, so that by the use of my combined furnace, range, and ventilator the air passing through the rooms is always fresh
30 and pure even during the process of cooking. It will also be apparent that this furnace may be constructed of any suitable material.

Having described my invention what I
35 claim therein as new and desire to secure by Letters Patent, is:—

The combination of the oven O, and range
40 *e*, with the fire pot *d*, fire flues T, and warm air pipes P, Q, S, substantially as described.

CHARLES B. SAWYER.

Witnesses:

NATHL. WOOD,
IVERS PHILLIP.