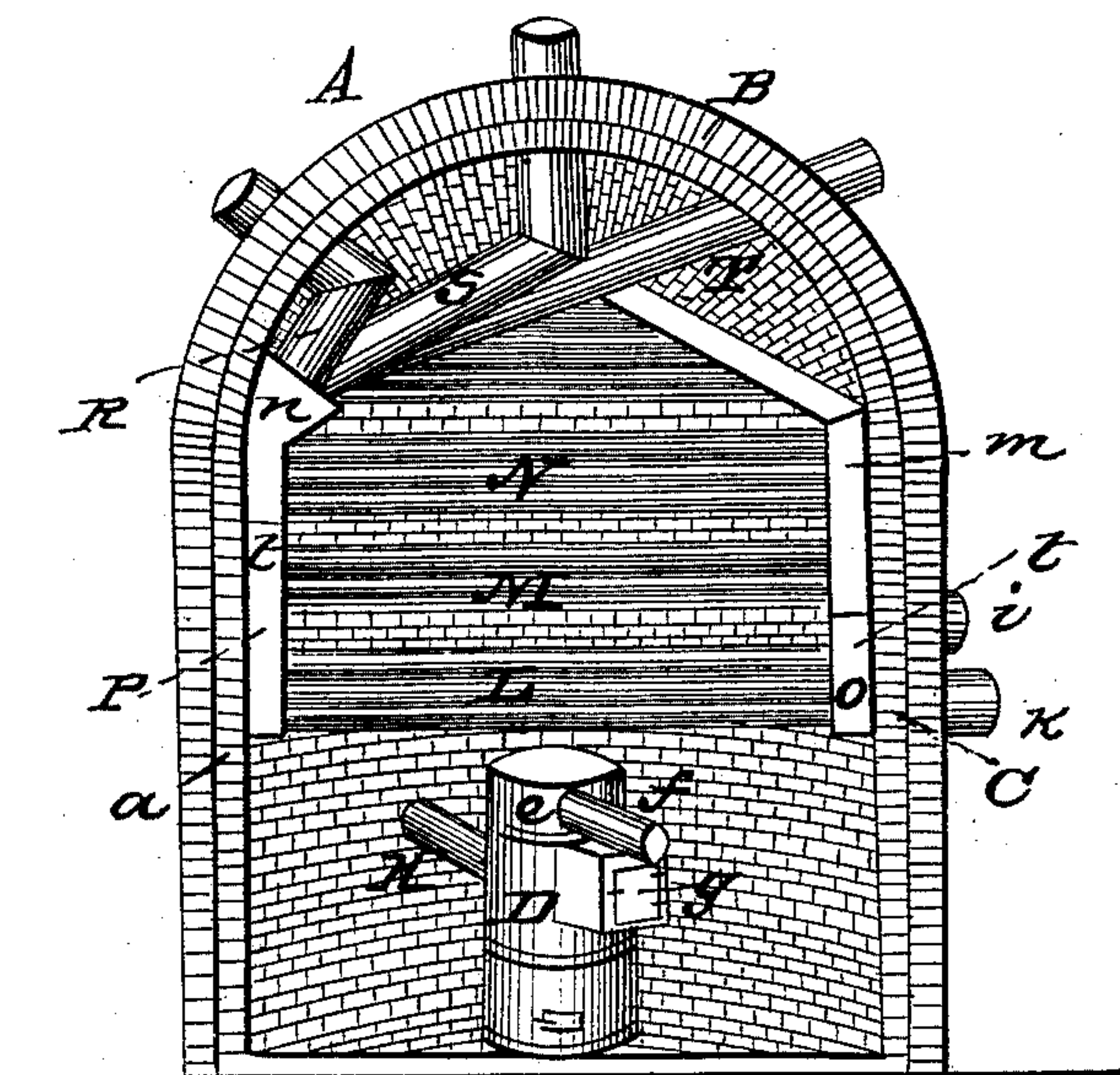


J. H. H. PERKINS.

Hot Air Furnace.

No. 16,287.

Patented Dec. 23, 1856.



Witnesses:
Wm. Baker
Geo. A. Clark

Inventor:
John H. Perkins

UNITED STATES PATENT OFFICE.

JOHN H. H. PERKINS, OF UTICA, NEW YORK.

HOT-AIR FURNACE.

Specification of Letters Patent No. 16,287, dated December 23, 1856.

To all whom it may concern:

Be it known that I, JOHN H. H. PERKINS, of the city of Utica, in the county of Oneida and State of New York, have invented a new and Improved Hot-Air Furnace for Warming Rooms in Dwelling-Houses, Churches, School-Houses, and other Buildings; and I do hereby declare that the following is a full and exact description of the same, reference being had to the annexed drawing and to the letters of reference marked thereon.

The nature of my invention consists in heating the air in the hot air chamber of the furnace by placing upon a stove or furnace properly constructed for that purpose, and standing in the usual way within the chamber an open vessel of water for making steam, and introducing the cold air near the bottom of the chamber, and circulating the same in close tubes around the chamber and within the volume of air and steam contained in the chamber and thus warming the air within the pipes by the exposure of the surface of these pipes to the atmosphere surrounding them which is highly charged with steam superheated by the furnace.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The annexed drawing marked A, represents a perspective elevation and sectional view of my furnace.

a, b, c, is the wall of the inclosure, which is here cut away in front for the purpose of exposing to view the interior arrangement.

d, is the stove, or furnace, and *e,* the open vessel standing on the top of the furnace and containing water.

f, is a lead, or spout by means of which water is fed to the reservoir. It has sufficient length to extend through the wall in front and present a convenient opening outside for this purpose. The door *g,* of the furnace in the usual way for convenience presents an even plane with the front of the wall.

H, is the smoke pipe, this too for the purpose of saving the heat from its surface may be revolved within the chamber before issuing therefrom.

i, and k, are cold air pipes by which the cold air is introduced within the chamber.

m, o, and n, p, are sub-chambers for the reception and transmission of the air; each

of these is divided into two apartments by the partitions denoted by the lines *t,* and, *z,* drawn across them. The cold air entering by both the pipes *i, k,* is received in the apartment *O*; from thence it proceeds through the range of pipes *L,* to the apartment *P,* and returns through the range of pipes *M,* to the apartment *m.* From this it again passes through the range of pipes *N,* to the apartment *n*; from whence it issues through the arch *B,* by the pipes *R, S, T,* as shown in the figure to the different rooms to be warmed in the usual manner. These ranges of small tubes *L, M, N,* extend horizontally from front to rear of the chamber, and are numerous, the front side of each range only is shown in the drawing. The sub-chambers just described connecting with the ends of these tubes are also of course coextensive in length horizontally with the ranges of tubes. This is only one mode of revolving the tubes containing the air, and is given here for illustration. Any other convenient mode of circulating the air within the chamber in close tubes or conductors may be adopted. It is not designed that this main chamber should be air tight. It is constructed in the usual manner and in any of the known forms. The excess of steam generated from the evaporation of water in vessel *e,* will find its way out through the imperfections in the main inclosure, or into the smoke pipe through its imperfections at the joints. The operation is, that the atmosphere within the main chamber, which is highly charged with steam, becomes highly heated from the fact that there is no draft or circulation through it, and on account of superheating the steam which is equally stationary around the furnace. Hence the air in its passage through the numerous small tubes as described, surrounded by an atmosphere so highly charged with caloric becomes greatly heated, while at the same time it is not permitted to come in contact with the hot iron surface of the furnace, and therefore loses none of its wholesome qualities. The air in passing from without through these tight conducting pipes is also secure from being adulterated by any of the deleterious gases from the air chamber, the furnace, or any other source in its passage, as it is easy to make these conductors entirely tight. The sub-chambers and conducting tubes may be made of tin, or other sheet metal, and may be soldered perfectly

tight, and for the purpose of radiating more perfectly they should be painted externally black.

I do not claim as new the superheating of
5 steam as this has been done heretofore for other purposes; but

What I do claim as new and desire to secure by Letters Patent is—

The mode here described of heating air
10 for warming purposes by passing it through

the hot air chamber in close subchambers and pipes, the main chamber being filled with air and steam commingled, and heated by the furnace, or stove substantially in the manner described.

JOHN H. H. PERKINS.

Witnesses:

WM. BAKER,

GEORGE H. CONGAR.