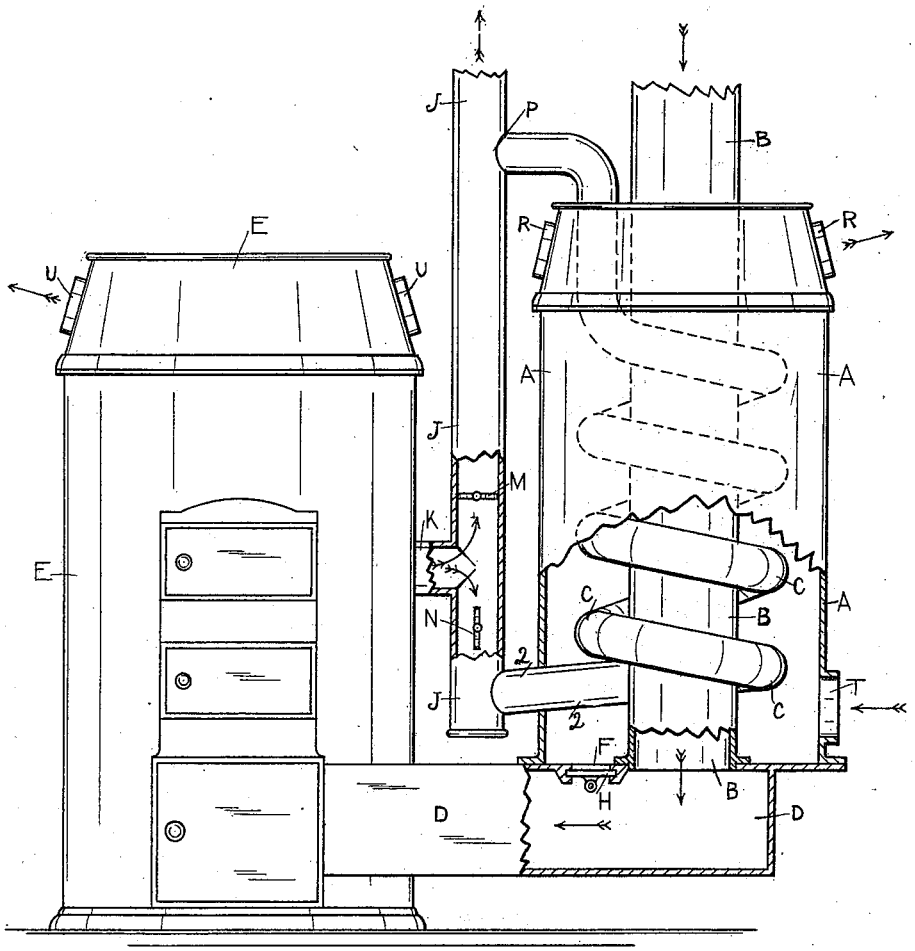
No. 649,251. Patented May 8, 1900.

I. L. MAUDE.

HOT AIR FURNACE.

(Application filed June 26, 1899.)

(No Model.)



Witnesses.
B. E. Herald
L. E. George

Inventor.
Isaac L. Maude
John H. Hindry,
Atty.

UNITED STATES PATENT OFFICE.

ISAAC L. MAUDE, OF HAMILTON, CANADA.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 649,251, dated May 8, 1900.

Application filed June 26, 1899. Serial No. 721,888. (No model.)

To all whom it may concern:

Be it known that I, ISAAC L. MAUDE, a citizen of Canada, residing at Hamilton, in the county of Wentworth, in the Province of Ontario, Dominion of Canada, have invented new and useful Improvements in Hot-Air Furnaces, of which the following is a specification.

My invention relates to improvements in hot-air furnaces in which the cold-air-duct pipe passes through an auxiliary and separately-connected atmospheric chamber previous to supplying the furnace with air. This cold-air-duct pipe in said atmospheric chamber is in some degree surrounded by a spiral pipe, the lower end of which passes through the wall of the atmospheric chamber and connects to the lower part of the furnace smoke-pipe and the upper end of this coil-pipe passes through the upper part of said atmospheric chamber and may connect to an upper part of the said furnace smoke-pipe or to a chimney.

The objects of my invention are, first, to provide means for heating the cold air previous to its entrance into the hot-air chamber of the furnace proper in order that the furnace may be capable of giving out more heat without expending more fuel; second, to provide an additional auxiliary atmospheric chamber separate from the furnace proper, though in connection therewith and in proximity thereto, which shall be capable of containing hot air generated by means of the furnace smoke-pipe in spiral form around its central cold-air duct and capable of transmitting that heat to a certain room or rooms, as desired; third, to have provision for admitting cold air into the auxiliary atmospheric chamber independently of the cold-air duct of the furnace when desired, and, fourth, to afford facilities for regulating the heated air admitted into the auxiliary atmospheric chamber from the air-duct of the furnace and also means for regulating the heat transmitted from the smoke-pipe of the furnace to the auxiliary atmospheric chamber. I attain these objects by the mechanism illustrated in the accompanying drawing, in which is shown a front elevation of a hot-air furnace and an auxiliary atmospheric chamber separate therefrom yet connected by means of the lower cold-air duct and smoke-pipe connection to the lower part of the furnace smoke-pipe. The cold-air duct and the auxiliary atmospheric chamber are shown sectioned in parts in order to disclose more fully the invention as embodied in this view.

In the drawing the auxiliary atmospheric chamber is indicated by A, the vertical cold-air duct by B, and the spiral smoke-pipe around said cold-air duct in said chamber by C. This atmospheric chamber rests upon the cold-air duct D of the ordinary hot-air furnace E and is closed to said air-duct D, excepting by opening F, which is regulated by means of a draw cut-off or damper H, and the lower end of the said cold-air duct B also connects with the said cold-air duct D of the furnace. The lower part 2 of the said spiral pipe is an extension and part of the said spiral pipe and extends out through the wall of the atmospheric chamber and connects to a lower part of the smoke-pipe J, which connects to the smoke-department of the furnace by means of the branch K. In order to supply more or less heat from the furnace to the atmospheric chamber A by means of these smoke-pipes, dampers are provided. One, said damper M, is located in the smoke-pipe J, immediately above the branch K, and is shown closed, and the damper N (shown open) is located below said branch and above the smoke-pipe extension 2. Therefore the full force of smoke is allowed to pass through the spiral pipe and upward, heating the air-chamber at the same time, and outward, forming connection to the smoke-pipe J at a convenient place, as at P. It will be observed that these said smoke-pipe dampers may be reversed in position or may be set at various angles in order to regulate the degree of heat required in the atmospheric chamber. The cold air in passing downward through the duct B becomes heated and passes into the lower air-duct D and thence into the air-chamber of the furnace proper to be further heated, and according to the disposition and proportion of the different flues more or less of the heated air from the duct D may be allowed to pass through the opening F in the upper wall of the air-duct D and thence into the chamber A, this admittance of air being regulated by the draw cut-off or damper H,

previously mentioned. The lower part of the chamber A is provided with a flanged opening T to form pipe connection thereto to bring cold air to said chamber if it is deemed necessary to augment the supply of air to the said air-chamber. It will be observed that when the cold air enters the air-chamber through the said opening T the air-opening F may be closed, and when closed a greater volume of heated air from the air-ducts B and D enters the furnace. The upper part of the chamber A is provided with one or more flanged openings U on the furnace E to form hot-air-pipe connections to carry off the hot air. The regulation of the several said dampers will be in accord with the degree of heat required in the several rooms of the building.

Various changes in the form and proportions and in the exact construction and location of the several parts of my invention may be resorted to without departing from the spirit and scope thereof. Hence

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An atmospheric chamber having a lower cold-air duct, and located on the horizontal cold-air duct of a hot-air furnace, and connected thereto by means of a cold-air duct running vertically through said chamber and to the said cold-air duct of the furnace, and a spiral pipe around said vertical cold-air duct, in said chamber, the lower end of said spiral pipe extending and connecting with the lower part of the smoke-pipe of the furnace, and the upper end of the spiral pipe extended through the upper part of said chamber and hot-air outlets, as described.

2. An atmospheric chamber provided with a vertical and centrally-located cold-air duct, the lower end of which connects to the cold-air duct of a hot-air furnace, a smoke-pipe connected to the lower extension of the smoke-pipe of the furnace and extending in spiral form around said vertical air-duct in said air-chamber, to heat the same, and out at the top, and suitable smoke-regulating dampers in said furnace smoke-pipe, for the purposes set forth.

3. An atmospheric chamber located on the horizontal cold-air duct of a hot-air furnace, a cold-air duct running vertically through said chamber and connecting to said air-duct of the furnace an air-opening, with regulating cut-off, between said air-chamber and the said horizontal cold-air duct of the furnace, and a smoke-pipe suitably connected to the smoke-pipe of the furnace and extending in spiral form around said vertical cold-air duct in said chamber, and out at the upper part thereof, as described.

4. An atmospheric chamber seated on the horizontal cold-air duct of a furnace, a cold-air duct extending vertically through said chamber, and connecting to said furnace air-duct, an opening into said chamber from said horizontal air-duct, an air-regulating cut-off to said opening, and a smoke-pipe extending in spiral form upward and around said vertical cold-air duct and out, the lower end of said spiral pipe extending through the air-chamber and connected to the lower part of the smoke-pipe, the latter provided with suitable smoke-regulating dampers, for the purposes set forth.

ISAAC L. MAUDE.

Witnesses:
CHRISTIANNA H. MAUDE,
A. D. DEVERELL.