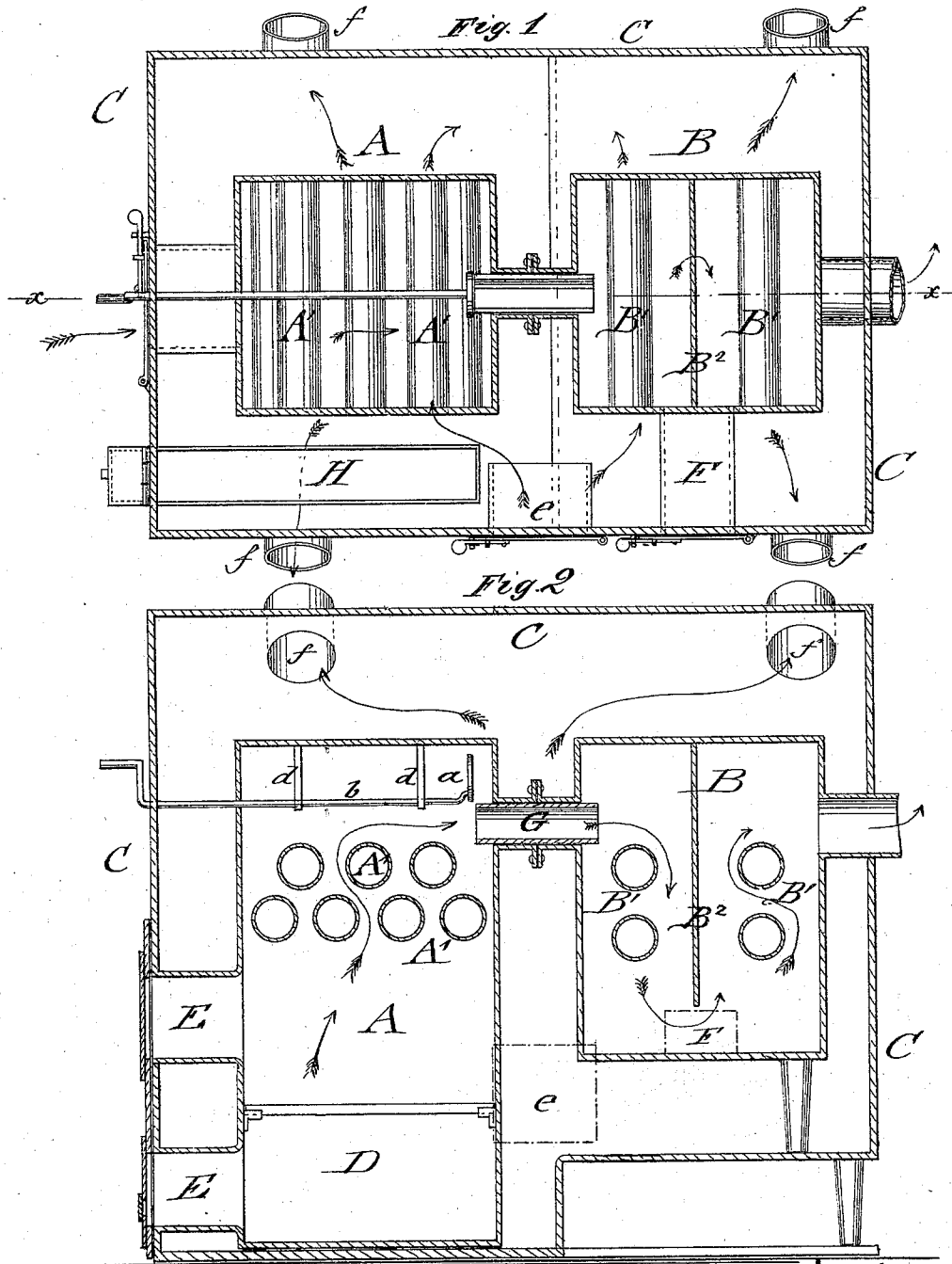


M. FUNK.
Hot-Air Furnaces.

No. 151,017.

Patented May 19, 1874.



Witnesses:

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UNITED STATES PATENT OFFICE.

MICHAEL FUNK, OF LA CROSSE, WISCONSIN.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 151,017, dated May 19, 1874; application filed January 31, 1874.

To all whom it may concern:

Be it known that I, MICHAEL FUNK, of La Crosse, in the county of La Crosse and State of Wisconsin, have invented a new and Improved Heating-Furnace, of which the following is a specification:

In the accompanying drawings, Figure 1 represents a sectional ground plan of my improved heating-furnace, and Fig. 2 a vertical section of the same on the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention is an improvement in air-heating furnaces in which the heating-chamber proper is inclosed in a case. The improvement relates to features of construction and arrangement, as hereinafter described, and specifically indicated in the claim.

In the drawing, A represents the furnace; B, the radiator; and C the casing of my hot-air heating-furnace. The furnace A is constructed to be used with any kind of fuel, and has transverse air-flues A' A' riveted to the top part, the ash-pit D being arranged below the grate. The face or front part of the furnace is some distance from the front part of casing C, furnace and ash-pit being connected to the doors of the casing by flanged extensions E, which are riveted to furnace and casing, and make thereby the face-surface of furnace and ash-pit available for heating up the air circulating around their front and side parts. The radiator B is constructed in similar manner of wrought-iron plates with lateral boiler-flues B¹, and with a central lateral partition, B², open at the bottom, by which the current of the fire-gases is deflected so as to pass around the air-flues before leaving by the exit-tube to the chimney, as indicated by arrows in Fig. 2. A good portion of the heat of the gases of combustion is thus utilized in the radiator. A channel or flue, F, connects the bottom of the radiator to the outside of casing C, for the purpose of admitting the taking out of the soot and other substances collected therein. The connection of furnace A and radiator B is made by means of bolted and cemented tubes G, all parts being constructed air-tight, so that none of the fire-gases can escape into the air-chamber, formed by

the casing, and produce an unhealthy admixture of the air circulating therein. The fire in the furnace is regulated from the outside by a damper, *a*, which closes partially or wholly the connecting-tube G, the damper-rod *b* being suspended in hook-shaped guides *d*, which are pending from the top of the furnace.

The whole furnace may be made portable or stationary, casing C being in the former case constructed of cast iron or other metal, and in the other case of brick walls of suitable thickness. The radiator is placed either to the rear side or top of the furnace, as found most convenient in the space in which the heater is to be put up. As the parts are all finished, the heating-furnace may be set up in very short time.

The necessary fresh air enters into the casing by a side door, *e*, near the lower part of the same, and passes out by the tubes *f* at the top part to the rooms or other places to be heated.

The air circulates freely through the flues and around furnace and radiator, and is supplied with a certain quantity of moisture from the horizontal water-tank H, which extends into the air-chamber from the front part of the casing, and is refilled from time to time from the outside.

The arrangement of the parts inside of the casing and their strong and solid construction produces a more complete utilization of the heat of the fuel than has been hitherto the case, while at the same time a very durable, easily-set up heating furnace for wood, coal, or other fuel is obtained, which furnishes a sufficient supply of moist and healthy air of any required temperature.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, with the furnace A, having air-flues A', and the radiator B having flues B¹, of the connecting-tube G, arranged as specified, and the damper *a*, operated by rod *b*, all as shown and described.

MICHAEL FUNK.

Witnesses:

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