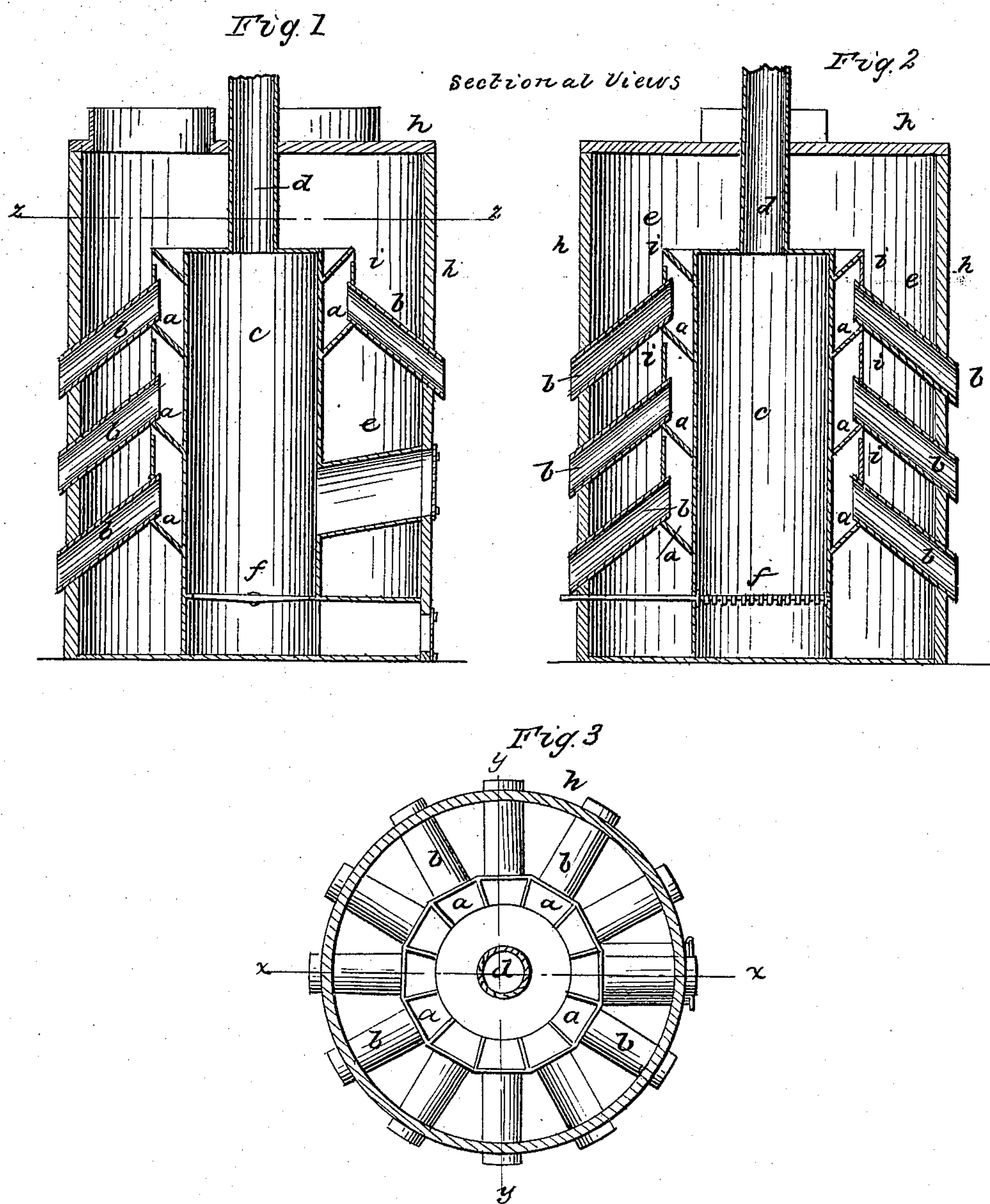


W. SAGE.
Hot Air Furnace.

No. 12,425.

Patented Feb. 20, 1855.



UNITED STATES PATENT OFFICE.

WILLIAM SAGE, OF DURHAM, CONNECTICUT.

AIR-HEATER.

Specification of Letters Patent No. 12,425, dated February 20, 1855.

To all whom it may concern:

Be it known that I, WILLIAM SAGE, of Durham, in the county of Middlesex and State of Connecticut, have invented a new and Improved Air-Heater or Air-Heating Furnace; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

The nature of my invention consists in such an arrangement of the air heater, or furnace, that the cold air is made to pass through series of inclined lateral pipes *b, b*, into series of short annular, or divided segmental compartments *a, a*, placed one above another around the fire chamber *c*, and having apertures for the discharge of the heated air therefrom into the hot air reservoir *e*, surrounding the said series of heating compartments, substantially as hereinafter set forth.

In the accompanying drawings, Figure 1, is a vertical central section in the line *x, x*, of Fig. 3; Fig. 2, a vertical section in the line *y, y*, of Fig. 3; and Fig. 3, a horizontal section in the line *z, z*, of Fig. 1.

Similar letters indicate like parts in all the figures.

The chamber of combustion *c*, and its grate *f*, should be constructed of suitable materials and in such a manner as to best adapt it to the fuel to be consumed therein. The outer surface of the said fire chamber *c*, has short air heating compartments *a, a*, arranged one above another around it, which receive the air to be heated through the inclined induction tubes *b, b*, and discharge the heated air therefrom through the apertures *i, i*, into the hot air reservoir *e*, surrounding said compartments. The air heating compartments *a, a*, may extend entirely

around the fire chamber *c*, or be divided into short compartments, as shown in the drawings.

The size of the air induction pipes *b, b*, should bear such a proportion to the areas of the heating surface of the compartments *a, a*, that the air will be raised to a proper degree of temperature in passing through said compartments. The object of surrounding the chamber of combustion *c*, with series of short independent compartments, combined with series of induction pipes, is to insure the direct contact of the air with the heating surface, as it enters the apparatus, and then to pass immediately from said surface into the hot air reservoir, thereby causing the air to be equally and uniformly heated, and preventing the air from remaining in contact with the heating surface long enough to be decomposed.

Having thus fully described my improved air heater, or air heating furnace, what I claim therein as my invention and desire to secure by Letters Patent, is—

Surrounding the chamber of combustion with series of short annular, or segmental, air heating compartments *a, a*, which are combined with series of inclined air induction pipes *b, b*, and communicate with the hot air reservoir *e*, which surrounds said compartments, by means of the induction apertures *i, i*, substantially in the manner and for the purpose herein set forth.

The above specification of my new and useful improvement in air heating furnaces signed and witnessed this 17th day of January 1855.

WILLIAM SAGE.

Witnesses:

Z. C. ROBBINS,
GEO. SMITH.