G. FOX.

Hot Air Furnace.

No. 2,994. Patented March 10, 1843.

Fig. 3,

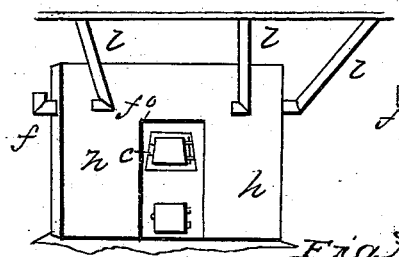


Fig. 4,

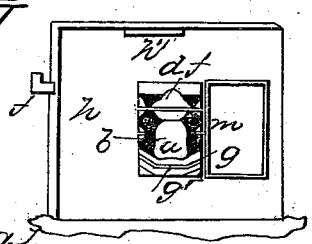


Fig. 1,

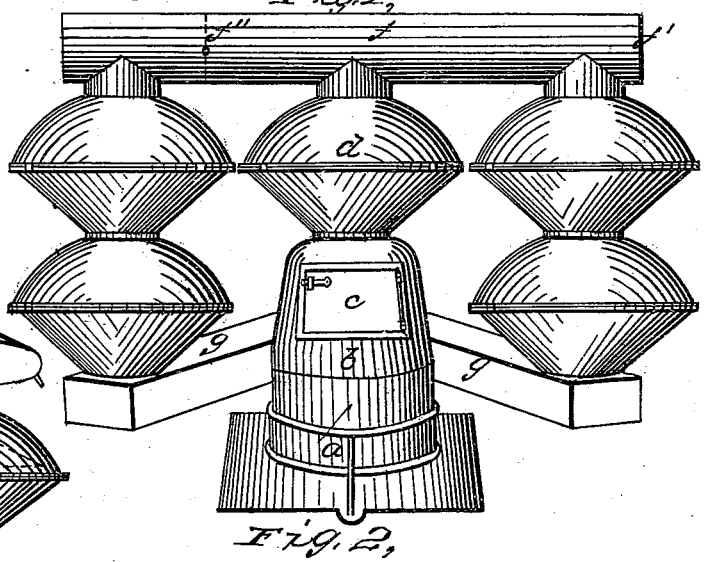


Fig. 5,

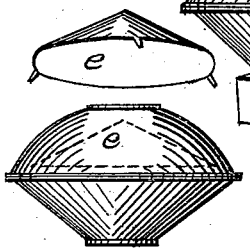
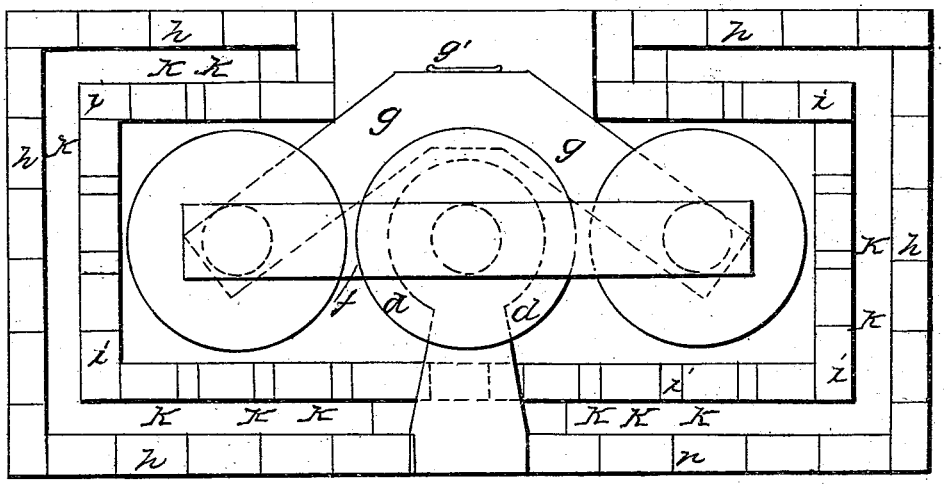


Fig. 2,



UNITED STATES PATENT OFFICE.

GURDON FOX, OF HARTFORD, CONNECTICUT.

AIR-HEATING FURNACE.

Specification of Letters Patent No. 2,994, dated March 10, 1843.

To all whom it may concern:

Be it known that I, GURDON FOX, of the city and county of Hartford and State of Connecticut, have invented a new and useful Improvement in Furnaces for Heating Buildings; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a front elevation of drums; Fig. 2, a ground plan; Fig. 3, front elevation of furnace; Fig. 4, back elevation of furnace; Fig. 5, drum and deflector detached.

The nature of my invention consists in combining a series of drums with the fire chamber, surrounded by brick work; the drums having conical deflectors as hereafter described; so as to produce a great surface of radiation, and an economic consumption of fuel.

The fire chamber (*a*) made of cast iron or other suitable material has a cap (*b*) which fits down onto it, in the front of which there is a door (*c*) for supplying the fuel through. An aperture is also made in the cap at the top onto which fits the first drum (*d*) of the series. The lower half of the drum (*d*) is in the form of a frustum of an inverted cone, the lower part just fitting the aperture at the top of the cap (*b*). Around the upper edge there is a flange, onto which the flange of the upper half of the drum fits. This part is the section of a spheroid, in the top of which there is a circular aperture; within the drum so formed there is a conical deflector (*e*), Fig. 5, (this is also shown by dotted lines within the drum in its proper position.) It has around its base short projections or legs which support it, leaving a space around its base so as to allow the products of combustion, heat, &c., to pass up all around between it and the outside of the drum. The apex of the cone is situated directly under the center of the aperture in the top of the drum; onto this aperture a short pipe fits which connects the drum with a horizontal pipe (*f*) near its center.

On each side of the drum as above described are two or more placed of the same form and construction one above the other; the upper one (which is on a level with the center one) connects also with the horizontal pipe (*f*). The lower drums on each side connect with each other by a square pipe (*g*); this pipe bends backward at its center so as to pass around behind the fire chamber; and it connects with the drums at their lower section.

The pipe (*f*) is closed at one end (*f'*) and the other is connected with the chimney flue; between the center drum and the outside one, on that side there is a damper (*f''*). When this is open the draft from the fire passes through the center drum and from thence directly into the chimney; but when the damper is closed the draft passes down through the series of drums situated at the opposite end of the pipe (*f*) from the damper; from thence it passes through the vent pipe (*g*) and up through the drums on the other side into the upper pipe and thence into the chimney; the heat being spread over the surface of the drums by means of the conical deflector (*e*).

The apparatus as above described is inclosed by an oblong brick chamber (a plan of which is shown in Fig. 2); there is an outside wall (*h*) of the thickness of a brick inside of which there is another wall (*i*) leaving a space between them of about the width of a brick; these are built up to a height above the horizontal flue (*f*) and the top is covered in by an arched iron plate. Near the top of the brick chamber in the outside wall there is an aperture (*h'*) for the admission of cold air, which passes down between the two walls and through the openings (*k*) made through the inside wall at the bottom, and thence around the drums and fire chamber by which it is heated and ascends to the top, it then passes off through pipes (*l*) which extend from the top of air chamber to the apartments to be heated in the usual way.

The drums and the inclosed deflectors are so arranged that they are easily cleaned; the ashes &c. being dislodged by beating them on the outside; it falls down into the pipe (*g*) below. In this pipe there is an aperture (*g'*) behind closed by a slide through which the dirt can be withdrawn; access to this is gained by means of a door (*m*) Fig. 4, and also to the whole interior of the brick chamber, for the purpose of adjusting or repairing the furnace; the front is so constructed that the door of the

fire chamber is always accessible as in all structures of this description.

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

1. The arrangement of the drums in the manner and for the purpose above specified.

2. I also claim in combination with the drums the conical deflector constructed and arranged in the manner above specified.

GURDON FOX.

Witnesses:
J. J. GREENOUGH,
CLEMENT T. COOTE.