G. WALKER.

Hot Air Furnace.

No. 3,623. Patented June 10, 1844.

Fig. 1

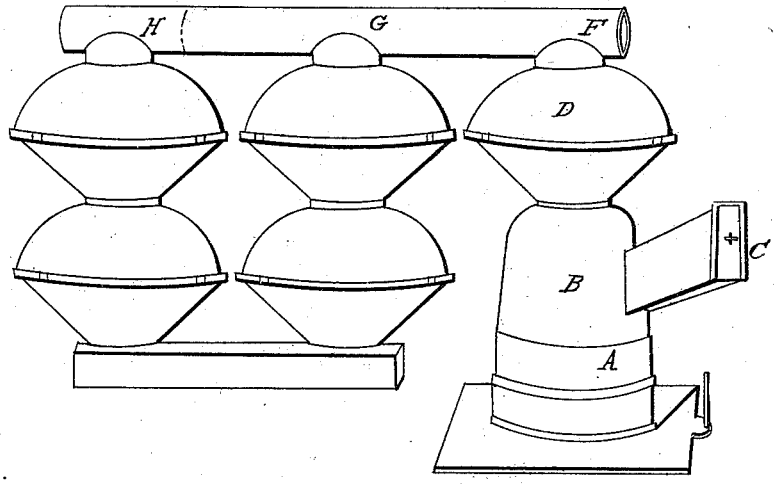


Fig. 2

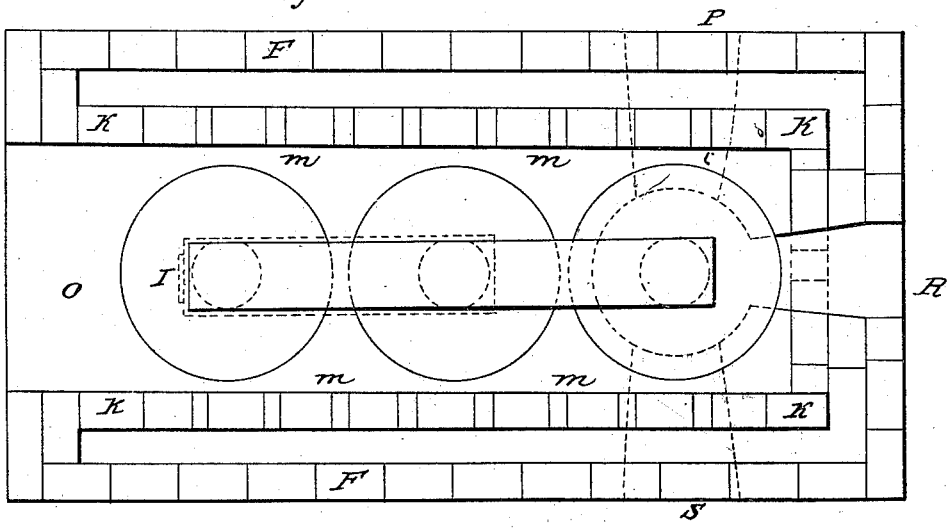


Fig. 3

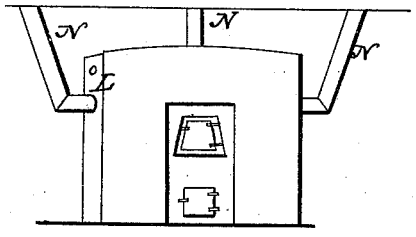


Fig. 4

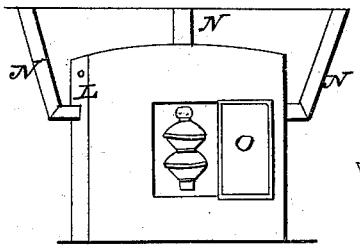
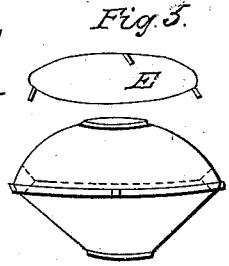


Fig. 5.



UNITED STATES PATENT OFFICE.

GEORGE WALKER, OF NEW HAVEN, CONNECTICUT.

FURNACE FOR HEATING BUILDINGS.

Specification of Letters Patent No. 3,623, dated June 10, 1844.

To all whom it may concern:

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

Figure 1 is a side elevation of combustion chamber and drums. Fig. 2 is a ground plan; Fig. 3, a front elevation of furnace set in masonry; Fig. 4, back elevation of furnace set in masonry; Fig. 5, drum and flat or horizontal deflector detached.

The nature of my invention consists of so arranging a series of drums above and in the rear of the combustion chamber, as to produce a great amount of heat from the smallest possible quantity of fuel and to suffer the least waste of heat by means of its escape through the smoke pipe or chimney and to be easily adjusted to fit different localities as hereafter described.

The combustion chamber, A, made of cast iron has a cap (B) which fits on to it, in the front of which there is a door (C) through which fuel is supplied. There is an aperture in the cap at the top into which fits the front 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 on to which the flange of the upper half of the drum fits, the upper half being a section of a spheroid in the top of which there is a circular aperture.

Within the drum so formed there is a flat horizontal deflector (E) Fig. 5 (this may also be seen by the dotted line within the drum). It has around its outer edge projections that keep it in its place, leaving a space around it so as to allow the products of combustion to pass all around between it and the outside of the drum. Into the aperture at the top of the drum a short pipe fits which connects the drum with the horizontal pipe (F, G, H,) near one end of it. In the rear of the combustion chamber and drum thus described, are placed two more drums of the same form and construction one above the other, the upper one (which is on level with the front one) connects also to the pipe at (G). In the rear of these two drums (that they may be as far from the combustion chamber as possible and thus be in the coolest part of the furnace) there are also two more drums, of the like form and construction, which are also placed one above the other in the same horizontal line with those already described, the upper end of which connects with the pipe (F G) at (H).

The two lower drums in the rear of the combustion chamber connect with each other by a round or square pipe (I). This pipe passes in a line from one drum to the other and it connects with the drums at their lower section. The pipe (F, G, H,) is closed at one end (F) and the other end is connected with the pipe that carries off the smoke into the chimney. Between (G) and (H) there is a damper. When this is open, the fire passes up through the front drum and directly through the pipe to the chimney, but when the damper is closed the fire passes down through the series of drums, situated in the center of the pipe (G) from thence it passes through the round or square pipe (I), and up through the drums the most remote from the combustion chamber (so as to be as cool as possible) into the upper pipe at (H) and from thence through the smoke pipe into the chimney, the heat being spread over the inward surface of the drums by means of the horizontal deflector (E).

The apparatus above described is inclosed in the usual way by a brick wall in the form of a parallelogram (a ground plan of which is shown in Fig. 2.) There is an outside wall (J) of the thickness of a brick, inside of which there is another wall (K) leaving a space between of about 4 inches, those are built up to the height above the horizontal pipe (F, G, H,) and their top is covered by means of brick, flat stones or arch. Near the top of the brick chamber in the outside wall, there is an aperture (L) (Fig. 4) for the admission of cold air, which passes down the space between the two walls and through the openings (M) (Fig. 2) made through the inside wall at the bottom, and thence around the drums and combustion chamber, by means of which it is heated and ascends to the top of the brick air chamber, it then passes off through the pipes (N) Figs. 3 and 4 which extends through both walls from the air chamber, to the apartments to be heated in the usual way.

The drums and pipe are so arranged that they can be easily cleaned, the ashes by any

convenient process being dislodged fall down into the pipe (I); in the pipe there is an aperture (I) Fig. 2 closed by a slide through which the ashes can be withdrawn. Access to this is gained by means of the door (O) Fig. 4 and also to the whole interior of the brick chamber for repairs or any other purpose, the drums being so arranged that the door (O) Fig. 2 can be placed at the end of the furnace most remote from the combustion chamber, is of course in the coolest part of the furnace, and therefore the least possible heat will escape by means of it. The drums are also so arranged that the heat in passing through them is continually receding from the combustion chamber into the coolest part of the air chamber, thereby reducing the temperature of the current in passing off, to the lowest degree possible and thus avoiding a waste of heat. The cap (B) Fig. 1 is so connected by a throat with the door (C) through which the fuel is passed, that the throat can be made to pass through the brick wall in either of three directions (P, R, S,) Fig. 2 as the room, location of the coal bin, or other motive may suggest.

I do not claim the part of the above apparatus; but

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

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

GEO. WALKER.

Witnesses:
L. C. Donn,
R. B. Griffin.