

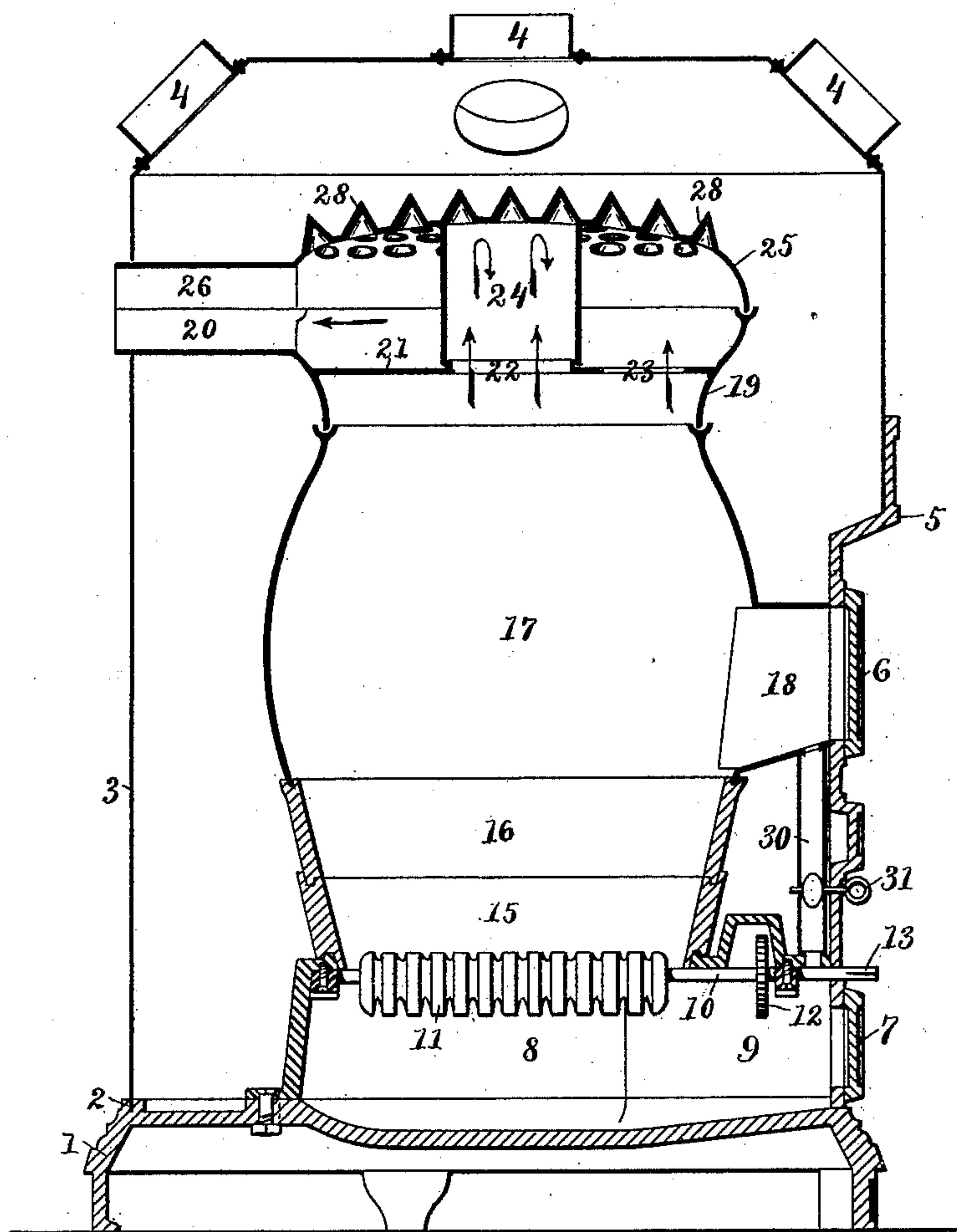
(No Model.)

W. C. HIGGINS.

FURNACE.

No. 358,037.

Patented Feb. 22, 1887.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WERTER C. HIGGINS, OF NORWICH, CONNECTICUT.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 358,037, dated February 22, 1887.

Application filed July 29, 1886. Serial No. 209,379. (No model.)

To all whom it may concern:

Be it known that I, WERTER C. HIGGINS, of Norwich, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to the class of furnaces ordinarily used for heating buildings, and in which the cold air is passed over suitable heat-radiating surfaces to increase the temperature of the air for heating purposes.

The object of my invention is to provide a hot-air furnace with extensive radiating surfaces, and also to render said furnace efficient and economic.

To the above purposes my invention consists in certain new and useful arrangement and construction of parts, hereinafter fully described and claimed.

In the accompanying drawing the illustration represents a sectional view of the furnace entire, taken on a vertical plane passing from front to rear through the center of the furnace.

Referring to the drawing, the part designated 1 is the base-plate, and is inverted-saucer-shaped, with suitable legs fixed upon its lower edge, and with a groove, 2, upon its upper edge for the reception of the superposed casing 3, and may be suitably perforated upon the bottom to allow the admission of cold air into the interior of the casing 3. The casing 3 is cylindrical-shaped with a closed top from which run the distributing-mains 4.

The face-plate 5 is curved to conform with the cylindrical form of casing 3, into the front of which said plate is set and riveted. The fire-door 6 and ash-door 7 are both located in the face-plate. The ash-pit 8 is an annular shell, tapering upwardly, and has at the front the ash-port 9, which is a box-like apartment. The grate-bars 10 are disposed across the upper part of the ash-pit 8, and have the three-cornered teeth 11 and pinions 12, and are suitably mounted to be turned on their longitudinal axes by means of a key fixed to their free ends 13, which project outside of the face-plate 5.

The fire-pot consists of two similar sections, 15 and 16, which are tapering annular shell-like pieces, and flare upwardly. Above the fire-pot is the fire-chamber 17, which is somewhat vase-shaped, being large at the bottom, then contracting upwardly, and then flaring outwardly. To the lower front part of fire-chamber 17 is situated the fire-port 18, which is of the shape shown.

The crown-piece 19 is a circular shell-like piece which flares upwardly, and has at its rear the small chute 20. The deflecting-plate 21 is a flat annular plate with the central opening, 22, and the front opening, 23. Above and around the central opening, 22, is located the cylinder 24, which is open at both ends.

Over the crown-piece 19 and the cylinder 24 is placed the cap-piece 25, whose general shape is like an inverted saucer, and is provided at its rear with the chute 26, which, in conjunction with chute 20, over which it is snugly fitted, forms the smoke-pipe to carry off the products of combustion.

The primary feature of my invention lies in the peculiar construction of the cap-piece 25, together with the deflecting-plate 21 and the interposed cylinder 24. This cap-piece is constructed with the hollow conical pockets or projections 28, whose walls are of the same thickness as the body of the cap-piece, and they project outwardly into the space of the upper part of the casing 3. I have shown the conical apartments as located upon the top of the crown-piece and slightly spaced from each other; but of course their arrangement may be varied. By virtue of their construction and arrangement these hollow structures each affords quite a perfect radiator, each one acting like a miniature stove in its function, for the caloric current courses through their interiors while their outer surfaces radiate the heat very rapidly and efficiently. The cylinder 24 rests upon the deflecting-plate 21 about the opening 22, and its upper edge takes snugly up against the inner face of the cap-piece 25 and permits the direct heat from the fire to strike into the interiors of the several conical apartments 28, which it embraces in its area. The caloric current from the fire-

chamber 17 is deflected by means of the plate 21, and is compelled to find its way to the opening 23 in said plate, through which, after heating very thoroughly the walls of the fire-chamber, it passes, as per the arrows, around the annular chamber formed by the cap-piece 25, cylinder 24, crown-piece 19, and the deflecting-plate 21.

The advantages of my peculiarly-constructed cap-piece 25 are obvious. Besides the very efficient work it performs, the piece, with its peculiar conical apartments, is easily cast in one piece, since the structure is simple and is readily withdrawn from the mold in casting. Moreover, the entire structure is very durable. The part 30 is an ordinary dust-flue, which connects the ash-port 9 with the fire-port 18, which are closed by the doors 7 and 6, respectively.

The several parts of the furnace herein described may be constructed suitably of cast-iron, steel, or sheet-iron or any of the well-known materials adapted for the purposes here needed. The joints of the parts which come in contact may be set with cement or the like to make them retain their positions and to make the joints gas-tight.

There may be several modifications made in my invention without departing from the spirit of the invention as herein described and claimed. For instance, the shape of the conical apartments 28 may be changed to pyramidal or dome-like shapes.

I do not claim, broadly, the conical projections or pockets on the radiating-surface of a hot-air furnace, for I am aware that such construction is shown in United States Patent No. 153,537; but,

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

1. In a hot-air furnace, the combination, with the cap-piece, of the subjacent crown-

piece, the deflecting-plate formed with the central and the front openings, and the cylinder interposed between said cap-piece and crown-piece, and inclosing the central opening of said deflecting-plate, and having the top closed by said cap-piece, substantially as herein described.

2. The combination, with the cap-piece provided with the rear chute and the conical apartments, of the crown-piece lying beneath said cap-piece, having the rear chute and provided with the deflecting-plate which has the central and front openings, and the cylinder located between said cap-piece and said deflecting-plate, said chutes together forming the smoke-pipe, substantially as described.

3. The combination, with the concavo-convex cap-piece 25, provided with the conical apartments 28, of the subjacent annular crown-piece 19, the deflecting-plate 21, formed with the central opening, 22, and the front opening, 23, the cylinder 24, interposed between said deflecting-plate 21 and the cap-piece 25 and encompassing the central opening, 22, and having the top thereof closed by said cap-piece, substantially as herein described.

4. The combination, with the cap-piece 25, formed with the conical projections 28 and provided with the rear chute, 26, of the crown-piece 19, provided with a rear chute, 20, the deflecting-plate 21, formed with the central opening, 22, and the front opening, 23, and supported by the crown-piece, and the cylinder 24, placed above said deflecting-plate and about the central opening, 22, thereof, and closed at the upper end by the cap-piece 25, all substantially as herein described.

WERTER C. HIGGINS.

Witnesses:

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