

(No Model.)

N. E. FROST.
HEATING APPARATUS.

No. 548,436.

Patented Oct. 22, 1895.

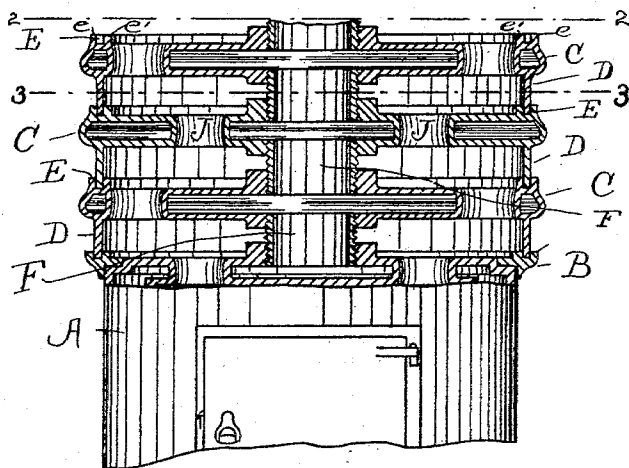


Fig. 1.

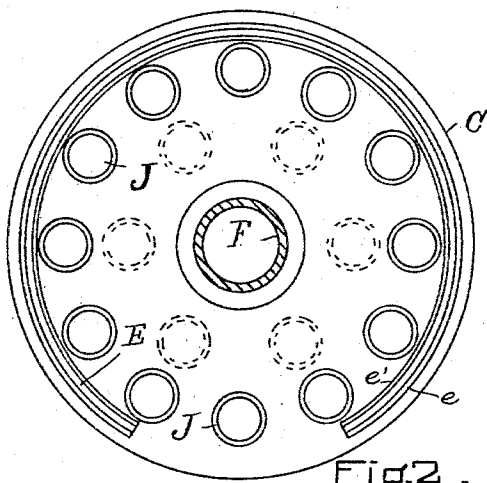


Fig. 2.

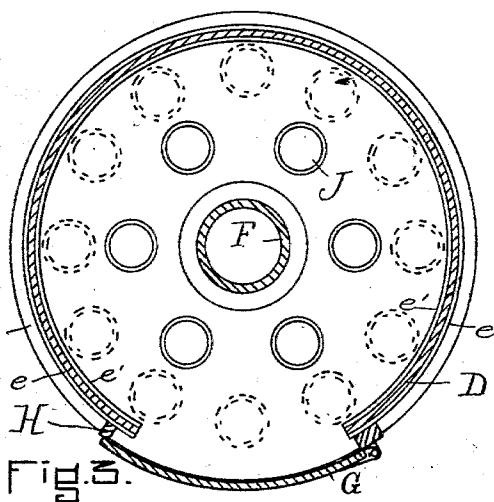


Fig. 3.

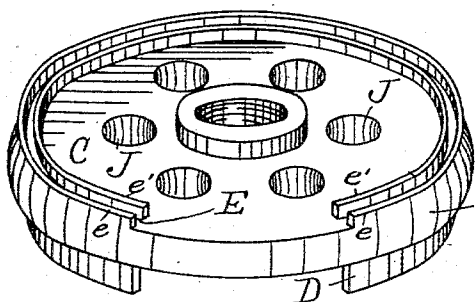


Fig. 4.

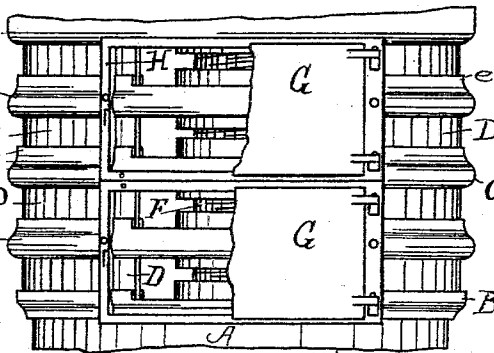


Fig. 5.

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NEWLAND E. FROST, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE SMITH & THAYER COMPANY, OF MAINE.

HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 548,436, dated October 22, 1895.

Application filed June 5, 1895. Serial No. 551,740. (No model.)

To all whom it may concern:

Be it known that I, NEWLAND E. FROST, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Heating Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates especially to the class of house-heaters in which steam or hot water is caused to circulate and the caloric current acts upon the water to raise its temperature by impinging against relatively thin water-containing sections arranged in the path of the current.

The part of the apparatus which constitutes my present invention may be called the "body" of the heater above the fire-pot, and it presents certain novel details of importance in securing the most effective exposure of the water to the action of the fire and the best results from the consumption of a given amount of fuel.

In the drawings, Figure 1 is a vertical sectional view of the three connected water-sections above the fire-pot of a heater. Fig. 2 is a top plan of the uppermost section on line 2 2 of Fig. 1; and Fig. 3 is a horizontal section on line 3 3 of Fig. 1, these two views showing the relative arrangement of the flue-openings. Fig. 4 is a perspective view of one of the sections, showing the flange cut away at the front. Fig. 5 is a front view representing the doors giving access to the interior of the heater for cleaning the sections.

The base and fire-pot and the upper portion of the heater are not herein shown, but they will be of suitable construction to co-operate with the body of water-sections represented and described herein. The particular construction employed in my complete heaters and including improvements devised by me forms the subject-matter of other applications filed and to be filed by me.

Referring now to the accompanying drawings, A indicates in Fig. 1 the upper portion of the fire-pot, to the center of which the lowermost water-section is screwed.

B is a marginal ring formed on or fitting upon the fire-pot and grooved in its upper face to form a seat for the flange of said sec-

tion. The fire-pot has hollow walls and top, containing water for circulation through the water-sections.

The water-sections C are flat, circular, hollow castings, preferably three in number as shown, and rounded or made slightly convex at their peripheral edges. Each section has a marginal flange D, extending downwardly from beneath its edge, and also a shallow groove E, corresponding thereto in its upper edge to receive the flange of the adjacent section. Said grooves E are formed on one side by upward projections *e* of the outer circumferential walls of the sections C and on the other side by inner ribs *e'*, formed on the upper horizontal surfaces or top plates of the sections C. The flange of the lowest section fits into the groove in the interposed ring B, and the groove in the top of the uppermost section receives the flange or annular wall of the dome or upper portion of the heater. A cement filling closes the joint tightly when the sections are in position, the flanges and rounded edges forming a close exterior wall for the heater-body.

The several sections are united to each other and to the fire-pot and dome by enlarged central threaded nipples F, which afford free passage for the water from one part into another and secure all together in one firm structure. The edge flanges constitute space-pieces, accurately determining the distance between the parts.

The flanges D are cut away at the front and doors G G are provided one above the other in a frame H, fixed to the edges of the sections. Access to the interior of the heater is thus secured, so that the upper and lower surfaces of the sections and the inner wall of the flanges and flues can be reached and cleaned off. It is not necessary to extinguish the fire in order to do this, because with the other doors closed the draft will be inward through doors G and will prevent ashes or gases escaping therefrom.

The several sections have flue-openings J formed through them for the passage of the caloric current, and these openings, circular in form, are beveled or enlarged gradually from the center upwardly and downwardly, or rounded at the inlet and outlet of each, so

as to promote the movement of the heated current. They are also staggered or alternately placed and varied in number, as indicated in Figs. 2 and 3, so that the current will impinge against the flat surface of the adjacent section, with an increased heating effect.

I claim as my invention—

1. In a heating apparatus, the water sections described, having broad, flat, hollow bodies set horizontally, with vertical flue-openings through them, a central threaded aperture in the upper and lower plate of each for connecting them together in series, a circular groove formed by an upward extension of the outer vertical wall and an inner circular rib formed in said upper plate, and with depending marginal flanges forming part of the heater wall and engaging with corresponding grooves on adjacent sections, substantially as set forth.

2. In a heating apparatus, a series of hollow, water-containing sections C connected centrally with each other and with the fire-pot top and steam dome, and formed marginally with depending flanges serving as space-pieces and as part of the heater walls, and with circular grooves in their top-plates formed by an upward extension of the outer vertical wall and a circular inner rib in the surface of said top-plate, said groove being adapted to engage with the corresponding flange on the adjacent section, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NEWLAND E. FROST.

Witnesses:

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JAS. L. MAULL, Jr.