(No Model.) 2 Sheets—Sheet 1.

S. N. MURGITTROYD.

HOT WATER HEATING APPARATUS.

No. 522,226. Patented July 3, 1894.

Fig. 1.

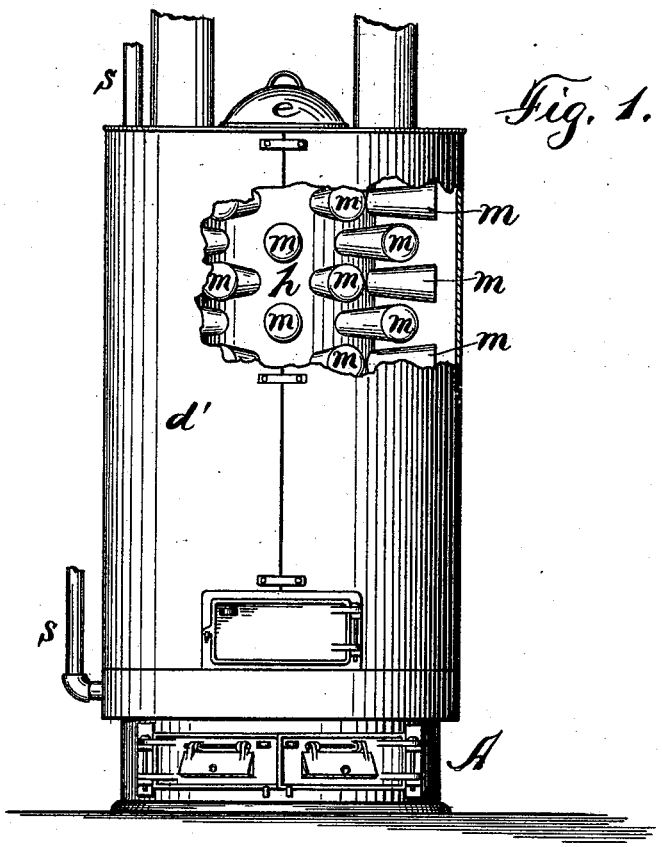


Fig. 4

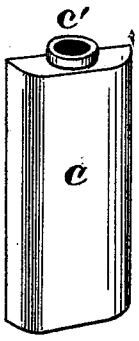
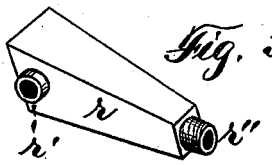


Fig. 5.



WITNESSES:
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(No Model.) 2 Sheets—Sheet 2.

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HOT WATER HEATING APPARATUS.

No. 522,226. Patented July 3, 1894.

Fig. 2.

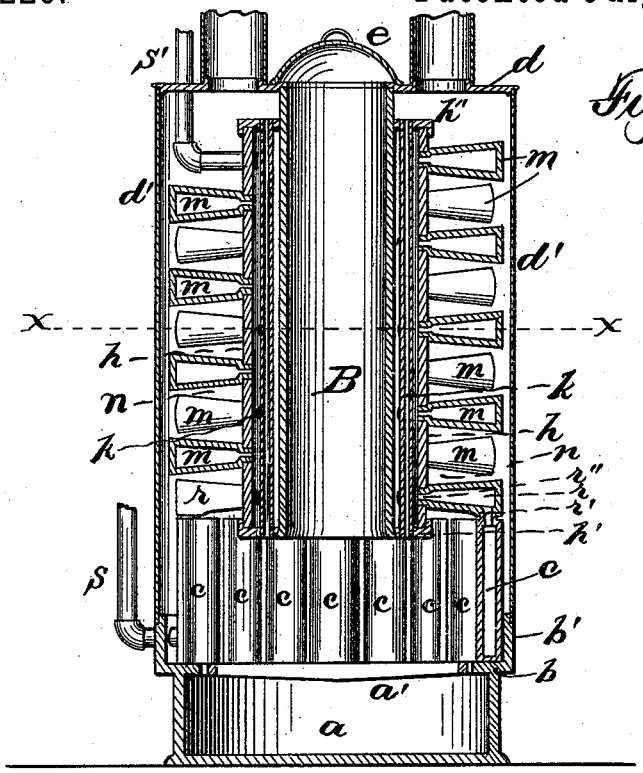
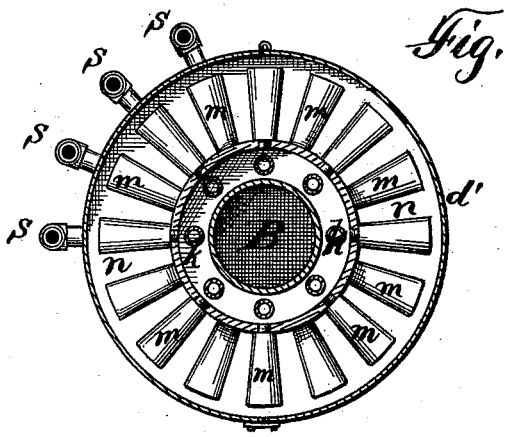


Fig. 3.



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UNITED STATES PATENT OFFICE.

SMITH N. MURGITTROYD, OF PHŒNIX, NEW YORK, ASSIGNOR TO THE PHOENIX HOT WATER HEATER COMPANY, OF SAME PLACE.

HOT-WATER HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 522,226, dated July 3, 1894.

Application filed June 29, 1893. Serial No. 479,135. (No model.)

To all whom it may concern:

Be it known that I, SMITH N. MURGITTROYD, of Phœnix, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Hot-Water Heating Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to hot water heating apparatus, and particularly to that class which are provided with a fuel magazine, and are "base burners."

My object is to produce a base-burning hot water heater, in which the fuel magazine is surrounded by an annular water-chamber, the wall of said magazine, or fuel conduit, forming the inner wall of said chamber, its outer wall being parallel thereto, said outer wall being provided with auxiliary water chambers connected to the water chamber and projecting outwardly into the smoke-chamber between said wall and the inclosing casing; in which the walls of the fire-pot consist of a series of hollow vertical water-chambers, one or more of which are connected to the return pipe of a hot-water heating system, each of the latter chambers being connected to the main water-chamber, and, through said tubular connections connected to each other, the feed pipe leading to the heating system being connected to the upper part of the main water-chamber.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1, is a front elevation of the heater part of the casing being broken away. Fig. 2, is a vertical transverse sectional elevation of the same, partly in elevation. Fig. 3, is a horizontal transverse sectional elevation of the same, substantially on line *x x*, in Fig. 2. Fig. 4, is a plan perspective of one of the sections of the wall of the fire-pot. Fig. 5, is a like view of one of the tubular connections between a fire-pot wall section and the main water-chamber.

A, is the base comprising the ash-pit —*a*—, the support for the grate or grate-bars —*a'*—, the shelf —*b*— and the vertical rim —*b'*—. Upon the shelf —*b*— the vertical sections —*c*— of the fire pot wall are placed, each section being cast hollow, closed at the bottom and having in the top an open neck —*c'*—.

B, is a tubular fuel-chamber or conduit, suspended wholly or partially from the top-plate —*d*— which is supported by the casing —*d'*— which latter is supported by the rim —*b'*—, said fuel-chamber being provided with a suitable cover —*e*—, to close the top. By means of the heads —*h'*— and —*h''*— around the fuel-chamber wall, and the vertical wall —*h*— between said heads an annular water chamber —*k*— is created, hereinafter termed the main water-chamber. In suitable holes in the wall —*h*— the auxiliary water-chambers —*m*— are secured, each consisting of a hollow cast body, having an open neck —*m'*—, said necks being secured in said wall and also connecting these chambers to the main chamber. Each of these chambers —*m*— is substantially frusto-conical in form, the large end being the outer one, and all of them projecting into the smoke or combustion chamber —*n*— between the casing and the wall —*h*—. Each of the sections comprising the fire-pot wall, and hereinafter called the fire-pot water-chambers, is connected to the main-water chamber by means of a tubular connection —*r*—, provided with an open stem —*r'*— fitting closely into the neck of each fire-pot water-chamber —*c*— and with an open neck —*r''*— inserted into the wall —*h*— of the main water-chamber. The return pipe or pipes —*s*— are connected to one, or more, of the fire-pot water-chambers, adjacent to their lower ends, and the feed-pipe or pipes —*s'*— leading to the heating system are connected to the upper part of the main water-chamber. By this construction, I produce a base-burning heater, provided with fire-pot water-chambers, a main water-chamber, and auxiliary water-chambers, all connected and connected to the feed and return pipes of a heating system, all of said chambers and said connections being exposed to the direct action of the fire in the fire-pot, or to the products of combustion in the combustion chamber, thereby insuring rapid heating and rapid circulation and consequently imparting great

utility to the apparatus, with a very small consumption of fuel. Also, the auxiliary chambers being enlarged outwardly, thus hold a larger quantity of water, expose a larger quantity to the action of the heat, in addition to greatly increasing the heating surface.

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

1. A heating apparatus comprising a fire-pot, the walls of which consist of water-chambers, a coal feeding conduit above the fire-pot, an annular main water-chamber around said conduit, tubular connections between the fire-pot water-chambers, auxiliary water-chambers connected to and projecting laterally from said main chamber, in combination with a fire-pot, a combustion chamber, and the feed and return pipes of a heating system connected respectively to the main water-chamber and to the fire-pot water-chambers.

2. A heating apparatus comprising a fire-pot, the walls of which consist of water-chambers, a coal feeding conduit above the fire-pot, an annular main water-chamber around said conduit, tubular connections between said fire-pot water chambers and the main water-chamber, auxiliary water-chambers connected to and projecting from said main water-chamber and enlarged outwardly, in combination with a fire-pot, a combustion chamber, and the feed and return pipes of a heating system connected respectively to the main water-chamber and to the fire-pot water-chambers.

In witness whereof I have hereunto set my hand this 22d day of May, 1893.

SMITH N. MURGITTROYD.

In presence of—
H. C. BREED,
HOWARD P. DENISON.