No. 764,010. PATENTED JULY 5, 1904.

L. L. ROWE.

GAS HEATER.

APPLICATION FILED JULY 10, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

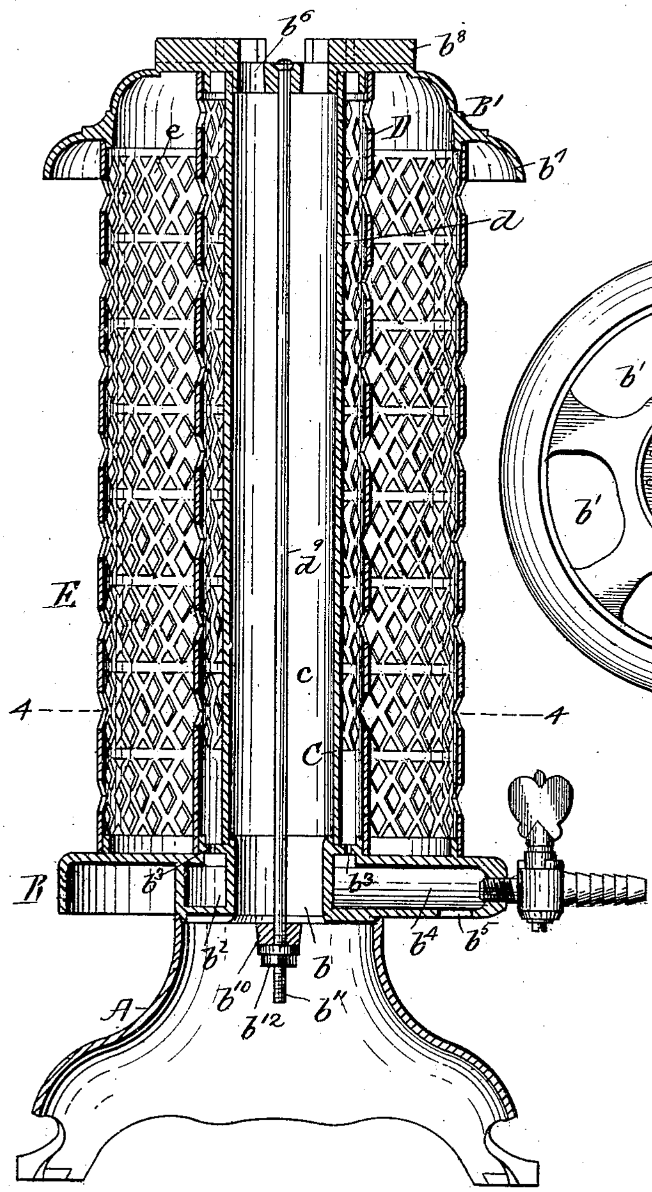

Fig. 1.

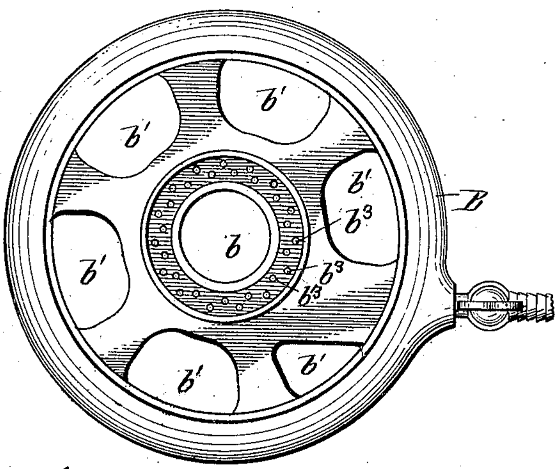

Fig. 2.

WITNESSES:

INVENTOR:

Levi L. Rowe

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NO MODEL. 2 SHEETS—SHEET 2.

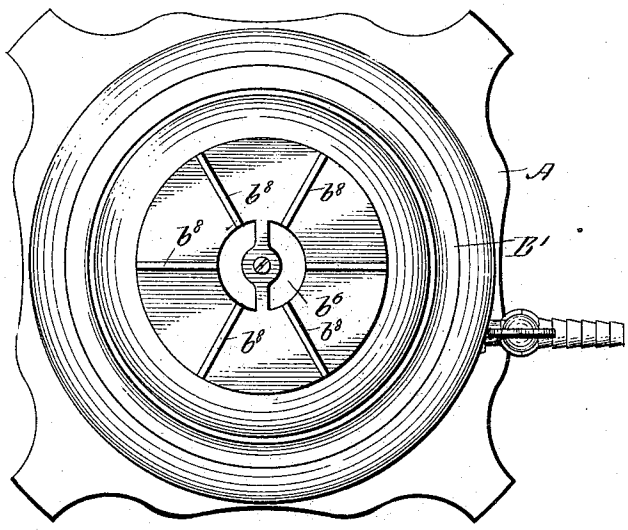

Fig. 3.

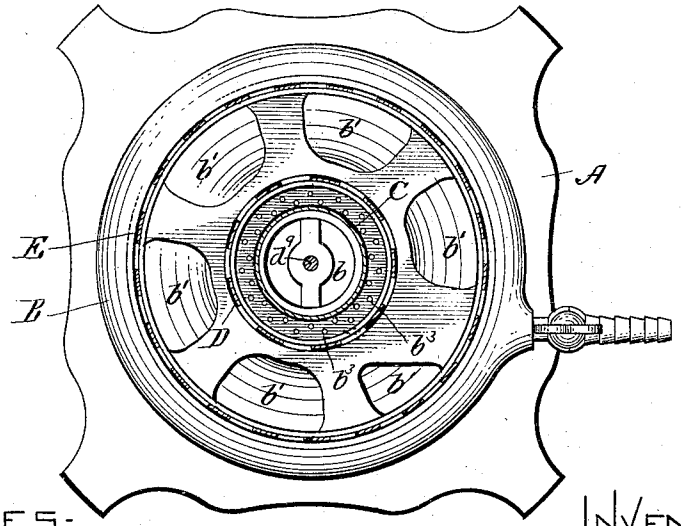

Fig. 4.

WITNESSES:

INVENTOR:

Louis L. Rowe

No. 764,010. Patented July 5, 1904.

UNITED STATES PATENT OFFICE.

LEVI L. ROWE, OF BOSTON, MASSACHUSETTS.

GAS-HEATER.

SPECIFICATION forming part of Letters Patent No. 764,010, dated July 5, 1904.

Application filed July 10, 1903. Serial No. 164,958. (No model.)

To all whom it may concern:

Be it known that I, LEVI L. ROWE, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Gas-Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to the herein-described gas-heater and which involves the use of a central air-conducting chamber or flue of considerable height open at its lower and upper ends and which is made of metal in the form of a pipe and serves also as a heat-radiator, a narrow gas-burning or combustion chamber surrounding said pipe which is formed by a metallic cylindrical shell which is perforated in whole or in part and through which air for the support of combustion may pass, and a circulating-chamber which surrounds the combustion-chamber and which is inclosed, preferably, by a perforated cylindrical metal shell, the central pipe and the two shells being held between an upper and lower head and in such a manner that there is a continuous circulation of heated air through the center of the heater and upward from the top thereof and also outward in all directions from the entire vertical surface thereof.

I will now describe the invention in conjunction with the drawings forming a part of this specification, wherein—

Figure 1 is a view in vertical central section of my improved gas-heater. Fig. 2 is a view in plan of the base-plate thereof. Fig. 3 is a view in plan of the heater, representing its top plate. Fig. 4 is a view in horizontal section upon the dotted line 4 4 of Fig. 1.

The burner is represented as mounted upon a stand A and as herein specified. Upon the stand is the base B. This base is adapted to act as a rest for the inner imperforate pipe C, the metal shell D surrounding the pipe and forming the combustion-chamber *d* and the exterior shell E forming the heat-circulating chamber *e*.

The base B is provided with an opening b to the central flue or passage c in the pipe C. The base also has the air-inlets b' to the circulating-chamber *e*, and it also is provided with the cylindrical gas-passage b^2, surrounding the opening b and having perforations b^3 opening into the combustion-chamber and acting as a flame-surface. This gas passage or chamber b^2 has the gas-inlet b^4 and air-inlet b^5, the chamber or passage b^2 being an air and gas mixing chamber and the flame forming in substance a Bunsen burner.

The upper ends of the pipe C and shells D and E are covered by a cap B′, which cap is provided with an outlet b^6 in line with the flue C and through which air entering the flue C through the inlet b and heated in its passage escapes. The cap is continuous over the circulating-chamber and preferably extends somewhat beyond its outer edge at b^7 and serves to cause the heat from the circulating-chamber to be deflected laterally from the heater. The cap may also have plate or pan rests b^8, having flat supporting-surfaces extending radially from the central opening b^6 therein and so that any article to be heated may rest thereon and not close the outlet in the cap, the outlet then being by means of the lateral passages between the rests.

The base B and the cap B′, either or both, may have means for holding the pipe C and the two shells D and E separated from each other, and the cap serves to lock the pipe and shells to the base by means of the rod d^9, the head of which bears upon the cap and the lower end of which extends through a hole in the bar b^{10} of the base and has below said hole a threaded section b^{11}, upon which a fastening-nut b^{12} screws against the bar. The rod passes through the flue in the central pipe.

The flame of the heater is cylindrical and is of the height of the combustion-chamber *d*. It heats the pipe C to a state of incandescence, or very nearly so, which not only establishes a draft through the central flue *c*, but also quickly and highly heats the air, which rapidly passes through it, so that there constantly emerges from the top of the heater a column of highly-heated air. The pipe C also acts in conjunction with the shell D to radiate heat into the heat-circulating chamber *e* and radially therefrom into the atmosphere, so that the

air surrounding the heater is heated from all sides of the gas-heater as well as from the top.

The metal shell D must be perforated sufficiently to supply the combustion-chamber with air for supporting combustion of the gas. It is desirable that this shell should be perforated throughout and that also the exterior shell E should be perforated in order that an ornamental effect may be secured, and especially for the purpose of permitting the cylinder of flame in the combustion-chamber to be seen through the perforations, as this makes a very pleasant and warm effect.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a gas-heater having an inner imperforate vertical pipe open at its top and bottom, a shell surrounding said pipe forming a combustion-chamber, a gas-burner in the bottom of said chamber, said shell having perforations situated above the burner to enable an additional supply of oxygen to reach the flame from said burner, the whole surrounded by a perforated shell and forming an annular heat-circulating chamber, as and for the purposes set forth.

2. A gas-heater having an inner imperforate vertical pipe open at its top and bottom and forming a heating-flue, a gas-burner surrounding the bottom of said heating-flue, a shell surrounding the pipe provided with perforations above the said burner to admit air, the said shell and pipe forming a combustion-chamber, a second shell surrounding the first-named shell and forming a heat-circulating chamber about it, a base having an opening to correspond to the opening in the heating-flue, and provided with openings connecting with the heat-circulating chamber, a cap having an outlet in continuation of the pipe-flue, and a cover for the circulating-chamber, as and for the purposes set forth.

3. A gas-heater having an inner, imperforate, vertical pipe forming a hot-air flue and provided with openings at its top and bottom, a shell surrounding the pipe, forming between them a combustion-chamber, a gas-burner in the bottom of said chamber, the said shell being provided with perforations situated above the said burner, a second perforated shell surrounding the first-named shell and forming a heat-circulating chamber about it, the base and the cap having means for holding between them the said pipe and said shells, the base having an opening to the pipe-flue and openings to the circulating-chamber, and the cap having an outlet for the pipe-flue and cover for the circulating-chamber, and a lateral, heat-deflecting extension beyond the outer shell.

4. A gas-heater having an inner, imperforate, vertical pipe open at its top and bottom and forming a heating-flue, a shell surrounding the pipe, forming between them a combustion-chamber, a second shell surrounding the first-named shell and forming a heat-circulating chamber about it, the said first and second shells being perforated in whole or in part, a base having an inlet to the pipe-flue, a gas mixer and burner for the combustion-chamber and openings to the circulating-chamber, a cap having an outlet from the pipe-flue and a cover for the circulating-chamber, and means for fastening the cap and base together and for holding the pipe and shells between them.

5. A gas-heater having a central, cylindrical pipe, forming a central, vertical, heating-flue, having an inlet at its lower end and an outlet at its upper end, a perforated sleeve surrounding said pipe forming with it a heat combustion-chamber through the perforations of which shell the flame is visible, a burner at the base of said combustion-chamber, a perforated, cylindrical shell surrounding said first-named, perforated shell and forming a heat-circulating chamber and radiator, a base having inlets connected with the combustion-chamber, and a top plate covering the circulating-chamber.

LEVI L. ROWE.

Witnesses:
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SAUL SIPPERSTEIN.