

No. 782,735.

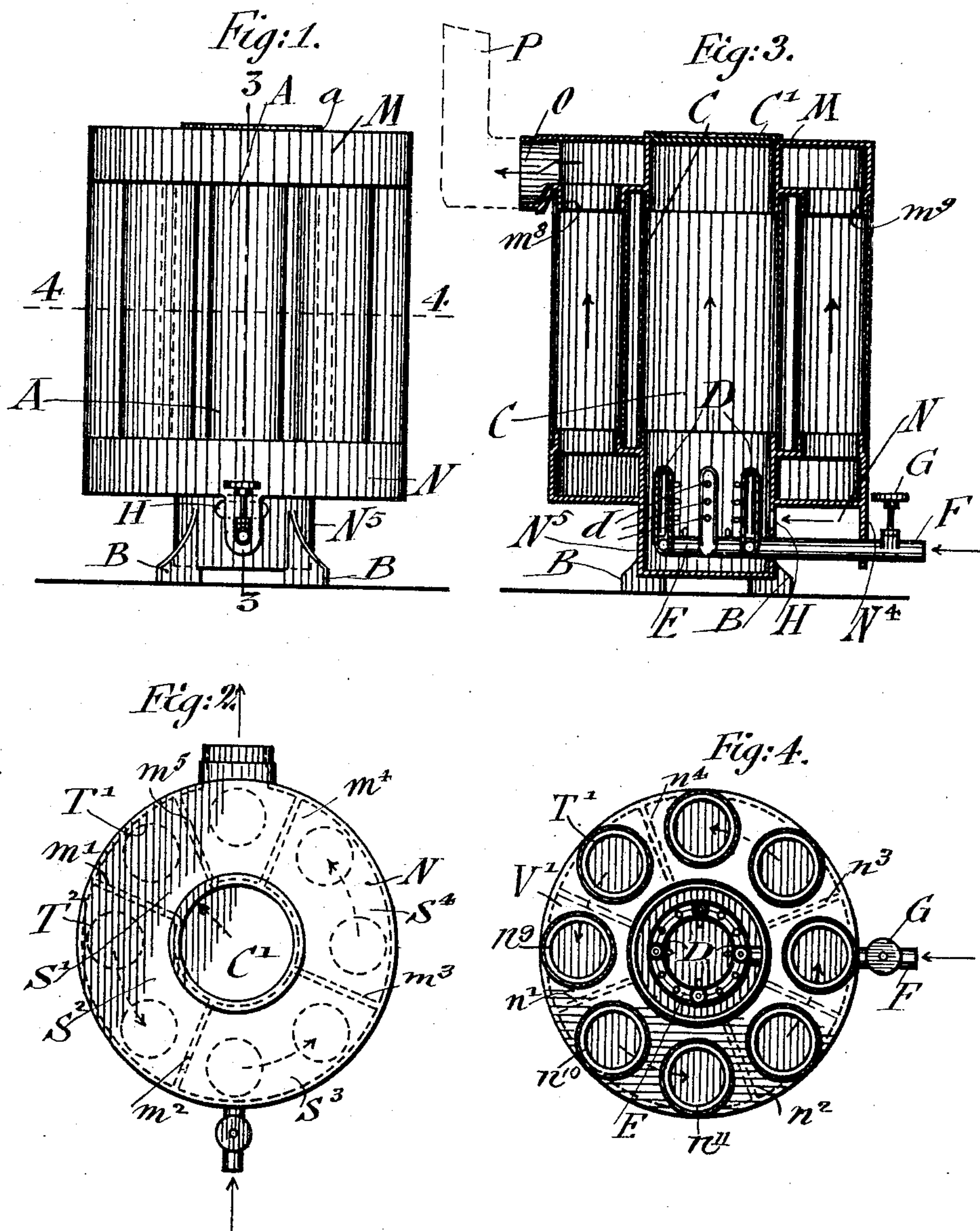
PATENTED FEB. 14, 1905.

C. EICKEMEYER.

GAS HEATER.

APPLICATION FILED OCT. 4, 1904.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 5.

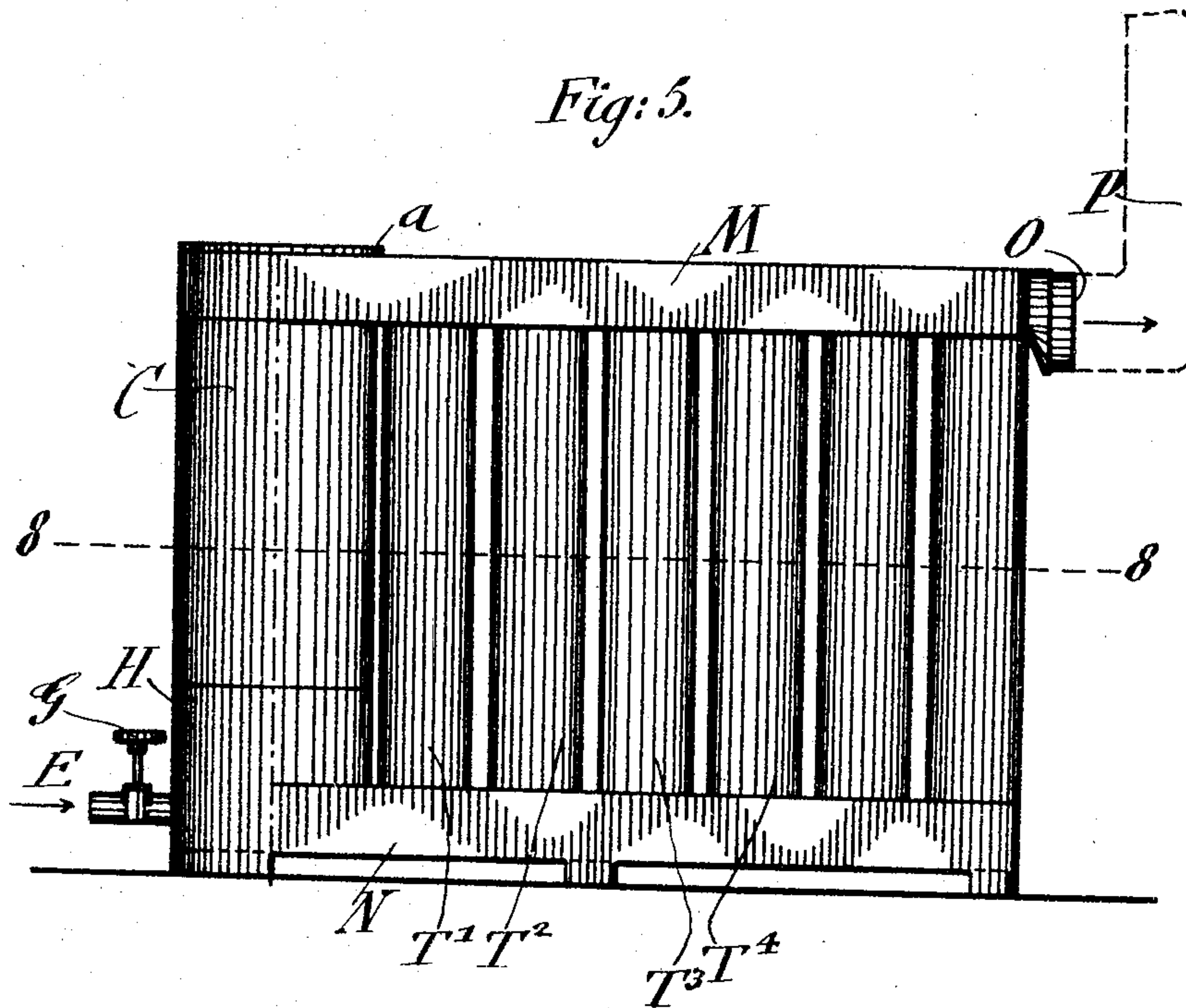
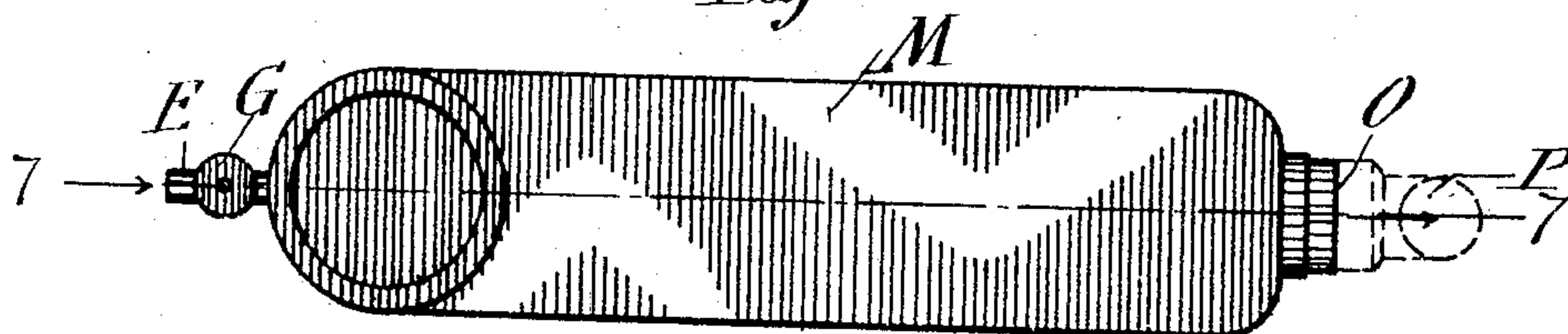


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

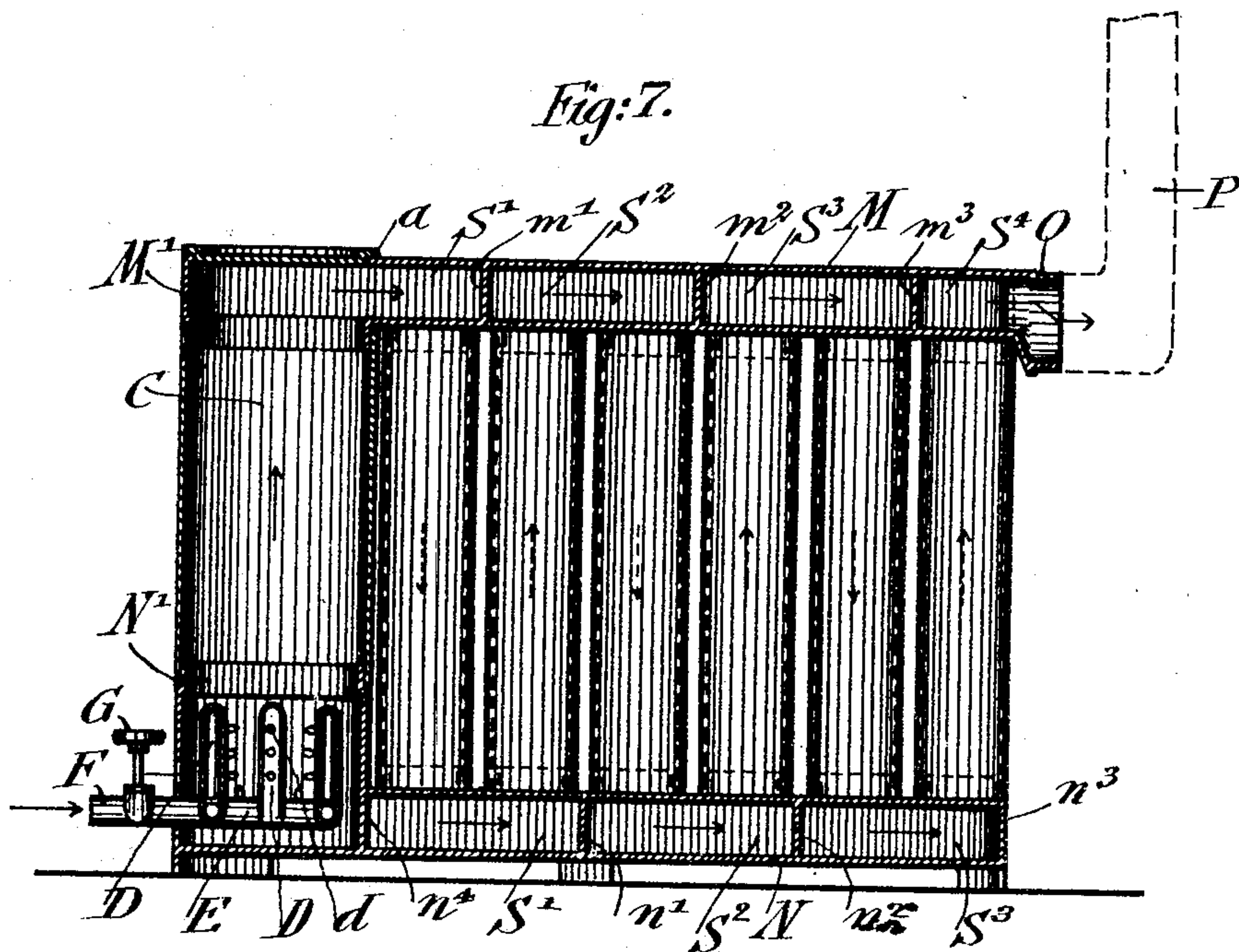
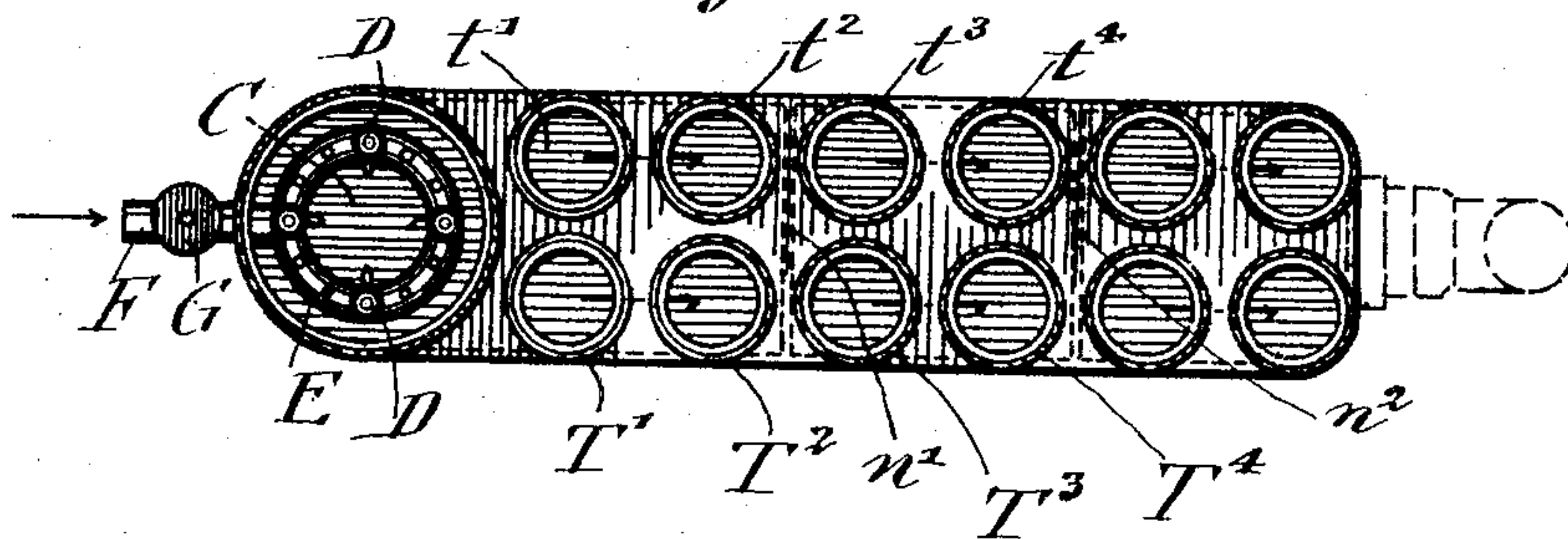


Fig. 8.



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UNITED STATES PATENT OFFICE.

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GAS-HEATER.

SPECIFICATION forming part of Letters Patent No. 782,735, dated February 14, 1905.

Application filed October 4, 1904. Serial No. 227,129.

To all whom it may concern:

Be it known that I, CARL EICKEMEYER, a citizen of the United States, residing in Yonkers, county of Westchester, and State of New York, have invented certain new and useful Improvements in Gas-Heaters, of which the following is a specification.

This invention relates to gas-heaters, and has for its object to provide an improved gas-heater which is simple in construction and efficient in operation and which by its more complete utilization of the heat of the products of combustion is specially adapted for heating living-rooms, apartments, or offices, the products of combustion being finally conducted to a chimney or to the outside, so as not to vitiate the atmosphere of the room to be heated.

For this purpose the invention consists of a gas-heater comprising a burner-tube, a burner therein, an upper heat-box having partitions forming compartments, a lower heat-box also having partitions forming compartments, the compartments of the upper and lower heat-boxes being in communication with the burner-tube and with each other, and a plurality of heat-dissipating tubes between said heat-boxes and in communication with the compartments thereof, as will be more fully described hereinafter, together with some further novel features and combinations of parts, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front elevation of my improved gas-heater. Fig. 2 is a plan view of the same. Fig. 3 is a vertical central section of the same, taken on line 3 3 of Fig. 1. Fig. 4 is a horizontal section of the same, taken on line 4 4 of Fig. 1. Fig. 5 is a side elevation of a modified form of my improved heater. Fig. 6 is a plan view of Fig. 5. Fig. 7 is a vertical longitudinal section taken on line 7 7 of Fig. 6, and Fig. 8 is a horizontal section taken on line 8 8 of Fig. 5.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents my improved heater, supported by legs B. The heater consists of a heat-generating part and a heat-dissipating part, both interposed be-

tween an upper and lower heat-box, having partitions which form intercommunicating compartments. The heat-generating part consists of a burner-tube C, in the lower portion of which and in a cylindrical part N⁵ of the lower heat-box is arranged a gas-burner D, which consists of a plurality of short vertically-arranged pipes *d*, that are supported by and communicating with a circular manifold E, connected with a main supply-pipe F, provided with a stop-cock G. The heater is provided at this end with an opening H for the entrance of the igniting means, as taper, match, &c. The upper casing is provided with an opening *a* directly above the burner-tube C, which opening is closed by a lid C'. When the lid C' is removed, a culinary vessel can be placed above the opening *a*, so as to be heated by the heat generated by the burner D.

The upper heat-box M is provided with a plurality of partitions *m*¹, *m*², *m*³, *m*⁴, and *m*⁵, which serve to divide the heat-box into a number of compartments S', S², S³, and S⁴. The lower part of the upper heat-box M is provided with circular downwardly-projecting flanges, of which two, *m*⁸ and *m*⁹, are shown in Fig. 3. The upper heat-box M is further provided at its rear end with a circular outlet-flange O, to which a pipe P, leading to the chimney or to a window, may be readily connected. The lower heat-box N is similarly provided with a plurality of partitions *n*¹, *n*², *n*³, and *n*⁴, which serve to divide the heat-box into a number of compartments V', V², V³, and V⁴. The upper part of the lower heat-box N is provided with circular upwardly-projecting flanges *n*⁹, *n*¹⁰, *n*¹¹. (Shown in Fig. 4.) These flanges, shown in the drawings as circular, may, however, be elliptical or of any other shape, depending on the shape of the heat-dissipating tubes. The lower heat-box N is closed at its lower end or bottom and provided with a downwardly-extending cylindrical portion N⁴, the open end of which corresponds in diameter with the burner-tube C. The portion N⁴ has a hole in its side wall for the gas-supply, which carries at its inner end the burner D.

Intermediately between the upper and lower heat-boxes M and N are interposed the burner-tube C, before mentioned, and a plurality of

heat-dissipating tubes T^1 T^2 T^3 , the upper and lower ends of which are supported on seats of the projecting flanges of the upper and lower heat-boxes. The object of these heat-dissipating tubes T^1 T^2 T^3 T^4 is to distribute heat of the products of combustion passing through the same and generated in the burner-tube C over a large and heat-emitting surface, so that the products of combustion when passing out of the outlet-flange O and pipe P have given up almost all the heat contained in the same.

In the form shown in Figs. 1 to 4 the heat-boxes are circular, the burner-tube is arranged in the center thereof, and the heat-dissipating pipes are arranged circularly concentrically around the same.

In the modified form shown in Figs. 5 to 8 the burner-tube is arranged at one end of the heat-boxes, and the heat-dissipating tubes are arranged in line with the vertical center plane of the same. As a further modification the heat-dissipating tubes are arranged in pairs, each pair communicating with a proper compartment of the heat-box.

The course of the products of combustion is as follows: Heat is generated in the burner-tube C and the hot air and products of combustion pass from the same into the compartment S^1 of the upper heat-box M, formed by the partitions m^1 and m^2 . From the compartment S^1 the products of combustion are drawn in downward direction into and through the heat-dissipating tube T^1 and into the compartment V^1 of the lower heat-box formed by the partitions n^1 and n^2 . From this compartment they are conducted upwardly into and through the heat-dissipating pipe T^2 into the compartment S^2 of the upper heat-box formed by the partitions m^1 and m^2 . They again descend into and through the next heat-dissipating tube T^3 and enter the compartment V^2 of the lower heat-box formed by the partitions n^1 and n^2 . The products of combustion, having already lost a considerable amount of heat in passing through the tubes T^1 and T^2 , are further deprived of their heat in passing through the remaining tubes communicating one with the other by means of the compartments of the heat-boxes until they finally pass out of the outlet-pipe P to the chimney or outside atmosphere.

The advantages of my improved heater are that the products of combustion in passing through the heat-dissipating tubes give out all their heat before arriving at the uptake or chimney, thereby heating up the room without vitiating the atmosphere of the same and

mingling then with the air of the room. A further advantage is that the heater is comparatively inexpensive and may be readily assembled, the heat-boxes being preferably made of cast-iron and the heat-dissipating tubes preferably of sheet metal.

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

1. A heater comprising oppositely-disposed heat-boxes, a burner-tube in communication with one of the same, a burner in said burner-tube, heat-dissipating tubes connecting said heat-boxes, and means in the latter for causing the hot gases from said burner-tube to pass successively through said heat-dissipating tubes.

2. A heater comprising oppositely-disposed heat-boxes, a burner-tube in communication with one of the same, a burner in said burner-tube, heat-dissipating tubes connecting said heat-boxes, and means in the latter for causing the hot gases from said burner-tube to pass successively through said heat-dissipating tubes and through adjacent tubes in the series in opposite directions.

3. A heater comprising oppositely-disposed heat-boxes, a burner-tube in communication with one of the same, a burner in said burner-tube, heat-dissipating tubes connecting said heat-boxes, and partitions in said heat-boxes for causing the hot gases from said burner-tube to pass successively through said heat-dissipating tubes.

4. A heater, comprising a lower heat-box, partitions for dividing said heat-box into a plurality of compartments, an upper heat-box, partitions for dividing the same into a plurality of compartments, the compartments of said heat-boxes alternating with each other, a burner-tube extending between said heat-boxes and in communication with a compartment of said upper heat-box, a burner in said burner-tube, and vertical heat-dissipating tubes extending between said heat-boxes and in communication with the compartments thereof, whereby the hot gases from the burner-tube are caused to pass successively through said heat-dissipating tubes and through adjacent tubes in the series in opposite directions.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CARL EICKEMEYER.

Witnesses:

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HENRY J. SUHRBIER.