

(No Model.)

W. P. CRATER.
STEAM GENERATOR.

No. 353,667.

Patented Dec. 7, 1886.

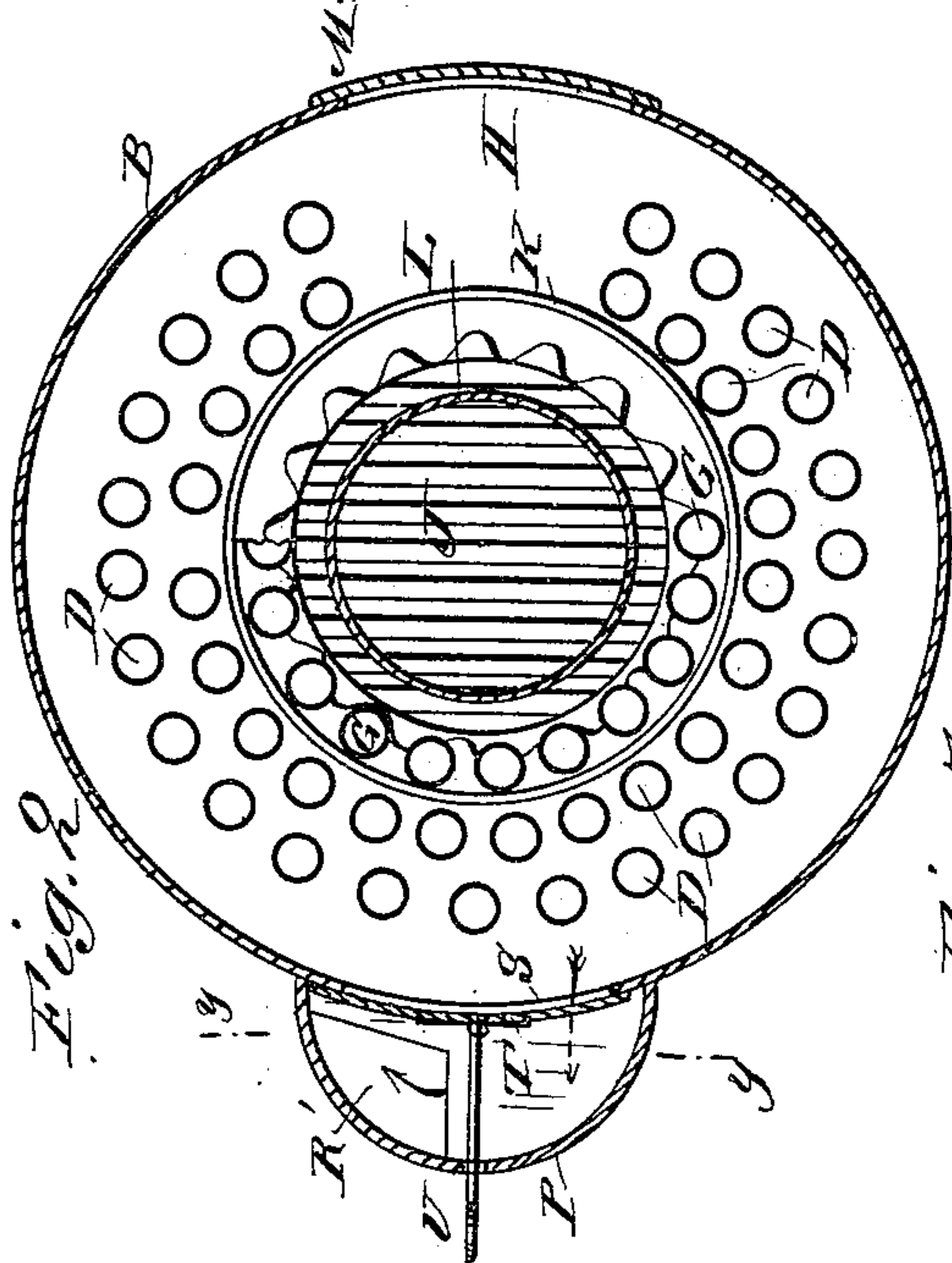


Fig. 2

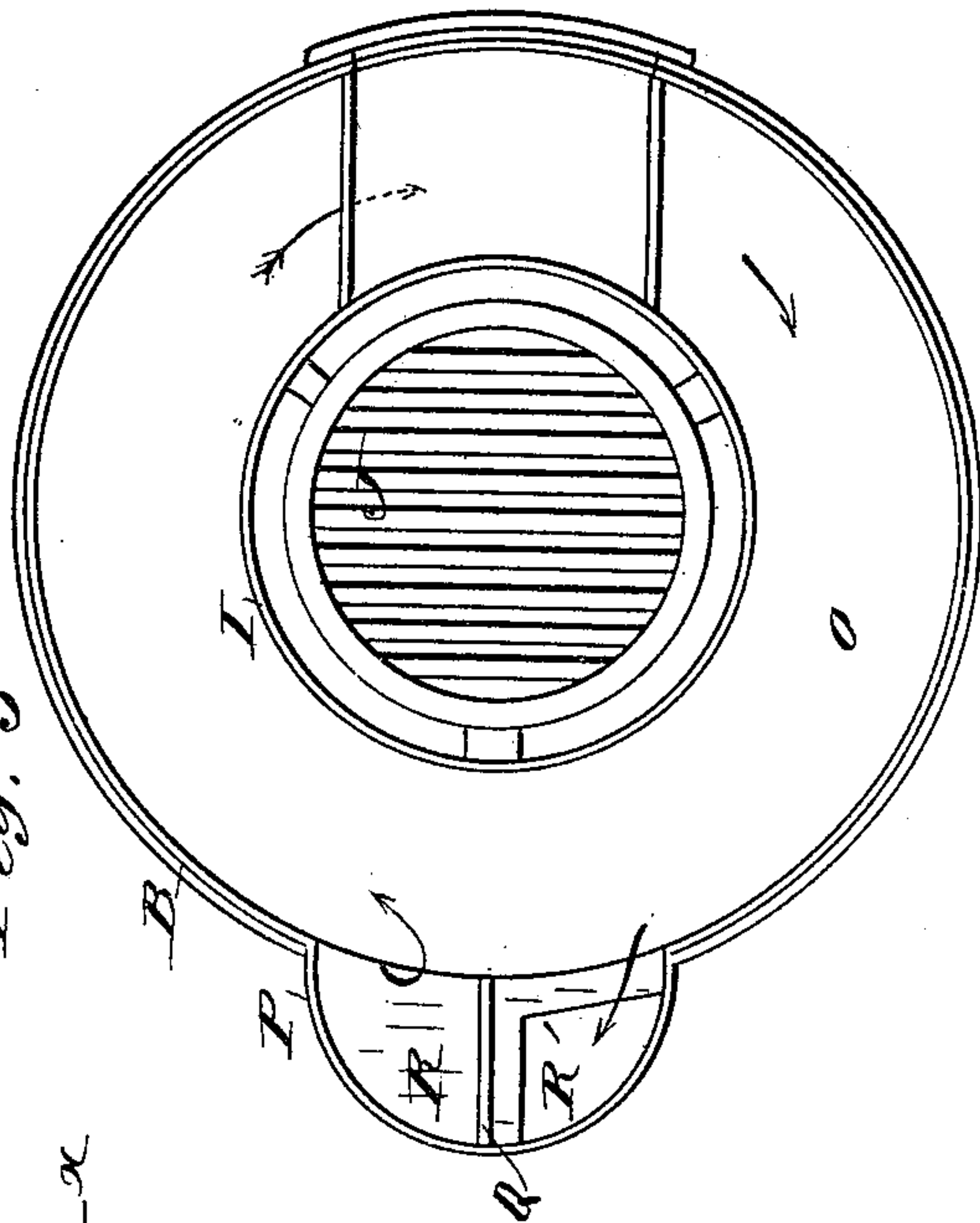


Fig. 3

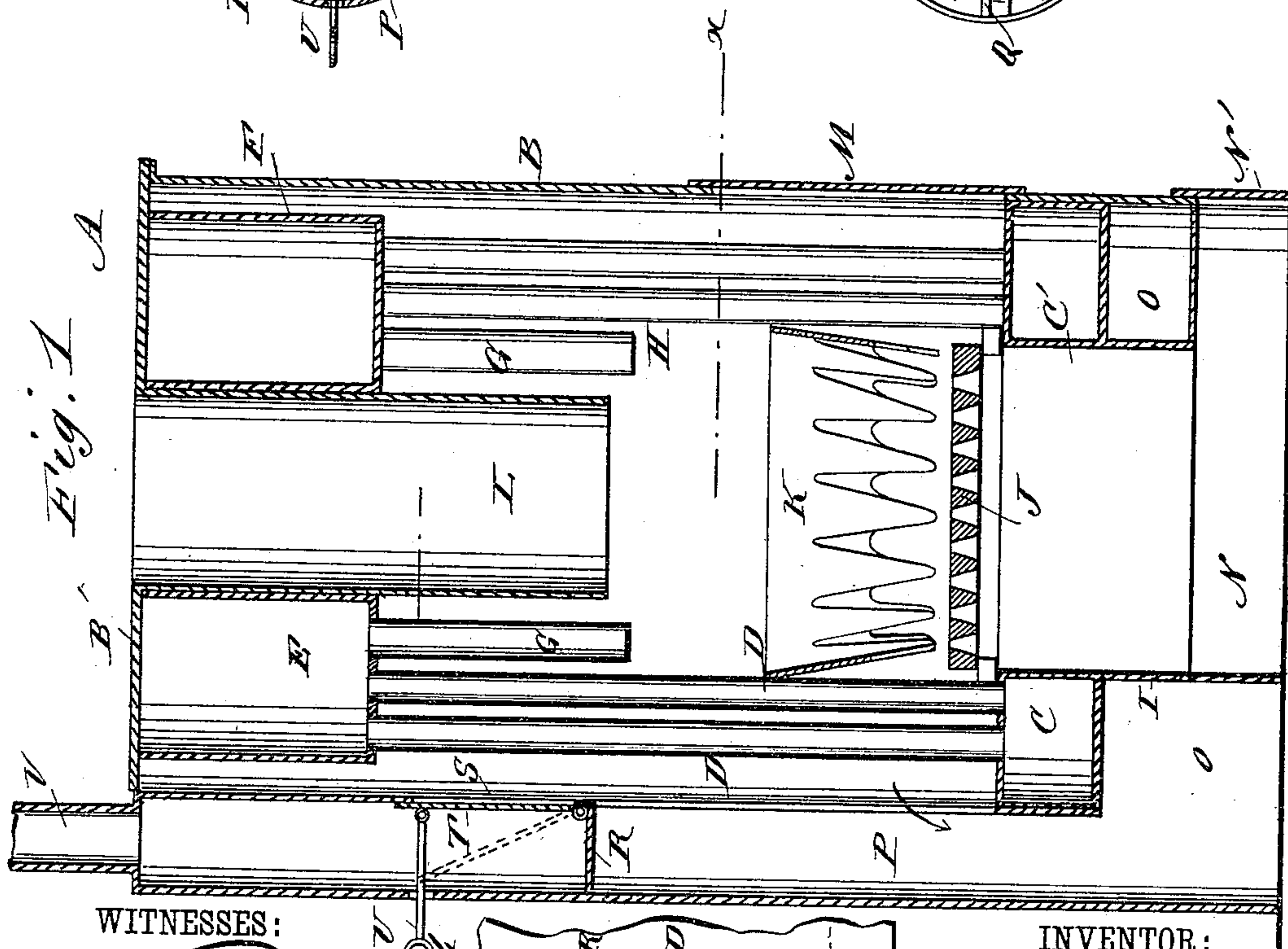


Fig. 1

WITNESSES:

C. Neveu
to Sedgwick

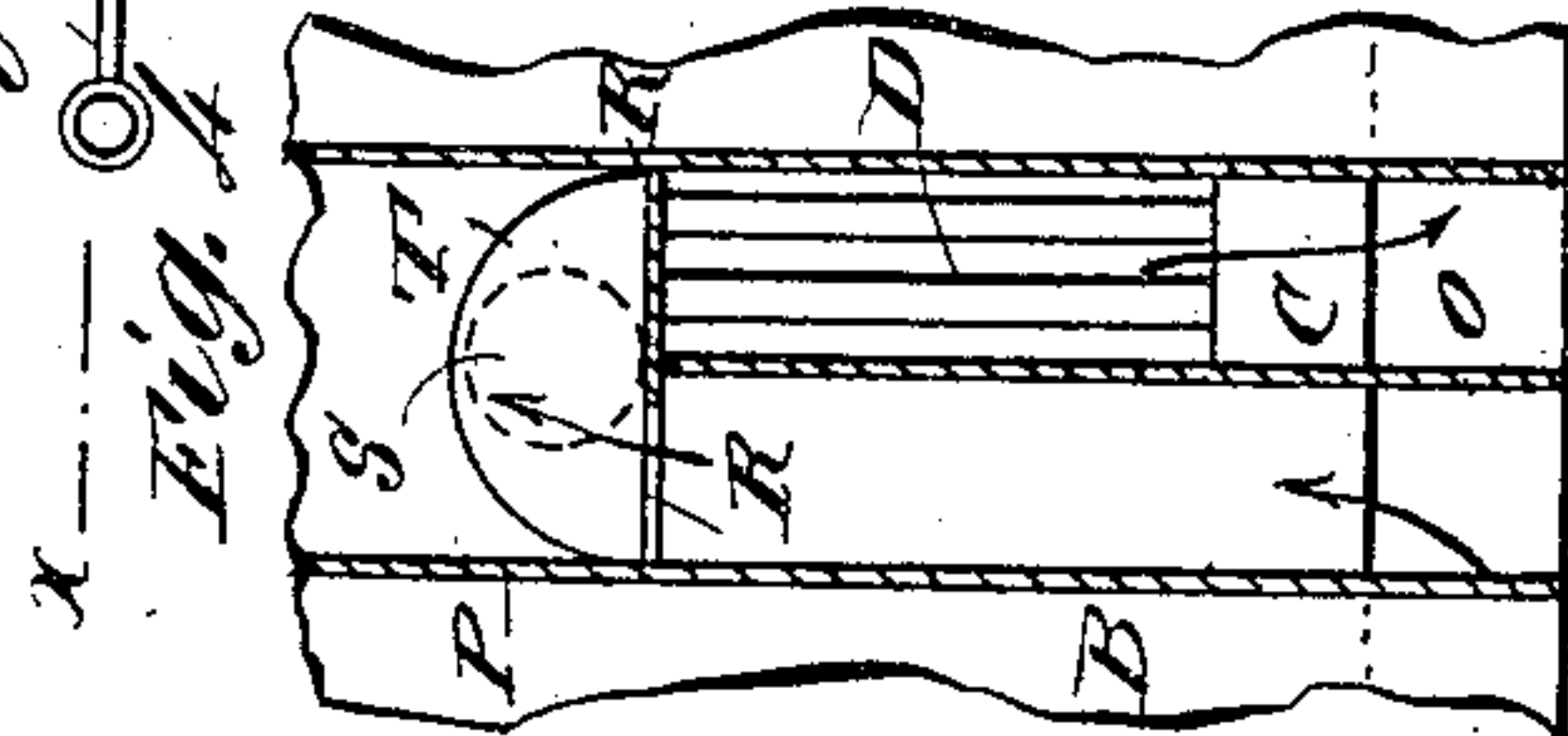


Fig. 4

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STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 353,667, dated December 7, 1886.

Application filed March 23, 1886. Serial No. 196,256. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. CRATER, of Salamanca, in the county of Cattaraugus and State of New York, have invented a new and Improved Steam-Generator, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved steam-generator, which is simple in construction and generates steam with great rapidity without using much fuel.

The invention consists of two water-tanks placed one above the other, connected by pipes and surrounding a fire-grate, fire-pot, and self-feeder, and of a peculiar draft arrangement.

The invention also consists of parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a central sectional elevation of my improved heater. Fig. 2 is a sectional plan view of the same on the line *xx*, Fig. 1. Fig. 3 is a bottom view of the same. Fig. 4 is a sectional elevation through the draft-pipe on the line *yy*, Fig. 2.

The steam-generator A is provided with the shell B, to which is secured a water-tank, C, connected by one, two, or more rows of pipes, D, with a water-tank, E, placed above the tank C, and attached to the top B' of the shell B in such a manner as to form an annular space, F, between the shell B and the outside of the water-tank E. The water-tank E is provided with the pipes G, closed at the bottom and extending downward into the space H, formed between the water-tanks C and E in the shell B.

Attached to the bottom of the water-tank C is a circular flue, O, extending entirely around and under the said tank C, through which is caused to circulate the surplus heat. Immediately above the water-tank C are placed the grate-bars J, above which is the fire-pot K. A self-feeder, L, passes centrally through the tank E and extends downward to a proper distance from the fire-pot K, forming an annular heating-space between the feeder L and the tank E. A door, M, is attached to the shell B for the purpose of giving access to the fire.

The ash-pit N, below the circular flue, is provided with the usual door, N', and may be surrounded by a brick wall. The flue P is provided on its lower part with a vertical central division-plate, Q, provided on top with a cover, R, which has on one side of the plate Q an opening, R', which leads into the upper part of the flue P.

Above the plate R is an opening, S, in the shell B, which connects the flue P with the space H, and which can be opened and closed by the hinged damper T, operated from the outside of the flue P by a rod, U. The flue P opens at its upper end into a pipe, V, which connects with the chimney.

The tank E is provided with the usual steam-pipes, steam-gage, and water and steam indicators.

The operation is as follows: The tank C and the pipes D and G are filled completely with water by means of the tank E, which is partly filled with water. The heat generated in the fire-pot K heats the water in the tank C, the pipes D and G, and in the tank E, thereby generating steam in the tank E, which steam may be drawn off by suitable connections for various purposes. The gases, smoke, cinders, &c., are drawn off through the openings S in the boiler-shell B into the draft-flue P, and out through the chimney-pipe V, the draft being regulated by the damper T, operated by its rod U. When the damper T closes the opening S entirely, the heat and gases generated in the space H pass from said space H into one compartment of the flue P, divided by the vertical partition Q, and around and under the water-tank C, through the annular space O and into the other compartment of the flue P, and up into the upper part of the flue P through the opening R' in the cross-plate R, thereby heating the lower tank, C, very effectually.

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

1. In a steam-generator, the combination of a shell and two tanks placed one above the other and connected with each other by pipes, of which the upper tank is provided with downwardly-projecting pipes closed at their lower ends, with a fire-place and a self-feeder, substantially as herein shown and described.

2. In a steam-generator, the combination of a shell and two tanks placed one above the other and connected with each other by pipes, of which tanks the upper one is provided with downwardly-projecting pipes closed at their lower ends, with a fire-place, a self-feeder, and a draft-flue, substantially as herein shown and described.

3. In a steam-generator, the combination of a shell and two tanks placed one above the other and connected with each other by pipes, of which tanks the upper one is provided with downwardly-projecting pipes closed at their ends, with a fire place, a self-feeder, an ash-pit, and a draft-flue, substantially as herein shown and described.

4. In a steam-generator, the combination of a shell and two tanks placed one above the other and connected with each other by pipes, of which tanks the upper one is provided with downwardly-projecting pipes closed at their lower ends, with a fire-place, an ash-pit, and a

draft-flue, the lower part of which is provided with a vertical central partition covered by a top plate having an opening on one side, substantially as herein shown and described.

5. In a steam-generator, the combination of a shell and two tanks placed one above the other and connected with each other by pipes, of which the upper tank is provided with downwardly-extending pipes closed at their lower ends, with a fire-place, self-feeder, ash-pit, and draft-flue, the lower part of which flue is provided with a vertical central partition covered by a top plate having a side opening, and the upper part is connected with the space formed between the said two tanks by an aperture which can be opened or closed by a damper, substantially as herein shown and described.

WILLIAM P. CRATER.

Witnesses:

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S. B. PARKER.