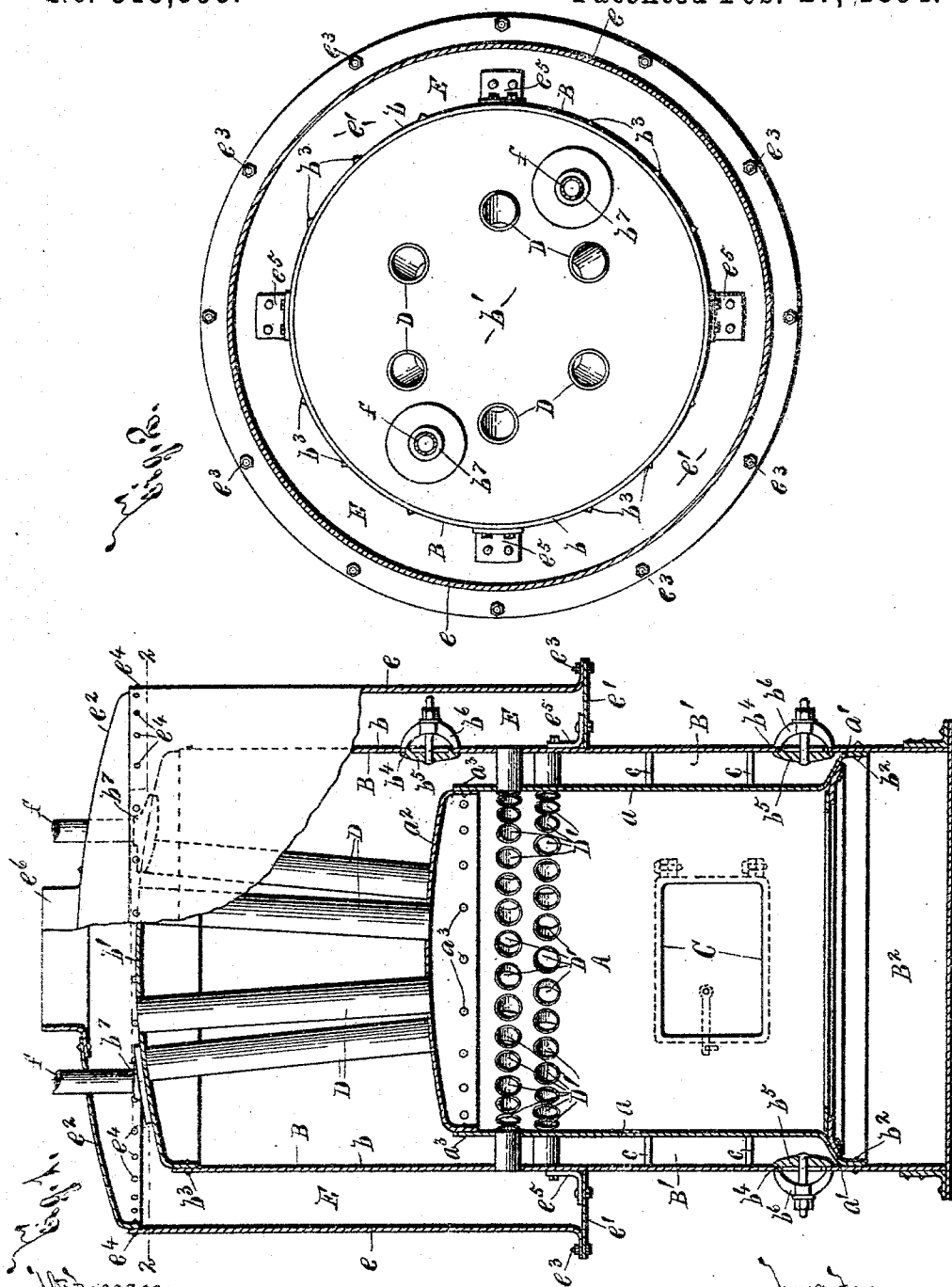


(No Model.)

W. J. RANTON.
GENERATOR.

No. 515,553.

Patented Feb. 27, 1894.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM J. RANTON, OF SYRACUSE, NEW YORK.

GENERATOR.

SPECIFICATION forming part of Letters Patent No. 515,553, dated February 27, 1894.

Application filed August 9, 1893. Serial No. 482,735. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. RANTON, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Generators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in steam generators, and has for its object the production of a simple, practical, and effective construction, which is particularly applicable for heating houses, halls, buildings, &c., is economically manufactured and assembled, is durable and effective in use, and consumes but a minimum amount of fuel; and to this end it consists in the general construction and arrangement of the parts, all as hereinafter more particularly described and pointed out in the claim.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which, like letters indicate corresponding parts in all the views.

Figure 1 is an elevation, partly in section, of my improved invention, illustrating the general construction and arrangement of its component parts, and Fig. 2 is a horizontal sectional view, taken on line 2—2, Fig. 1.

The combustion chamber A is preferably of cylindrical cross section, and is inclosed by an upright shell or wall α having an outwardly flared lower extremity α' and a top wall α^2 having an upwardly crowning central portion and having its edge suitably yet removably secured, as by rivets α^3 , to the upper end of the shell α .

B represents the water-containing chamber, which is also preferably of cylindrical cross section, and extends above the combustion chamber A, and is formed with a water leg B' at the side of and preferably surrounding the combustion chamber. This chamber B is formed of an upright wall or shell b of greater diameter than the shell α , and a top wall b' having an upwardly crowning removable central portion. The shell b extends downwardly beneath the lower extremity of the shell α , incloses the ash-box B², and is suitably secured to the outwardly flaring lower extremity of

the shell, as by rivets b^2 , and its crowning upper end is suitably yet removably secured, as by rivets b^3 , to the top wall b' . The shell b of the water-containing chamber B is formed with a series of cleaning openings b^4 arranged in proximity to the lower and upper ends of the combustion chamber and closed by suitable caps b^5 and clamping means b^6 ; and the shells b α are formed with a suitable inlet opening C for the entrance of fuel, and are provided with interposed braces c . The crowning top walls α^2 b' are substantially of the same curvature and hence parallel.

D D are nearly upright flues arranged within the water-containing chamber above the top wall of the combustion chamber and having their lower ends opening from the top wall α^2 of the combustion chamber and their upper ends separated a greater distance than their lower ends and discharging through the top wall b' of the water-containing chamber; by which construction the flues D stand at exact right angles to the top walls α^2 and b' and can therefore be more easily connected therewith than if they were truly vertical.

D' is a series of flues surrounding and opening from the upper portion of the combustion chamber and extending laterally therefrom and discharging through the adjacent portion of the shell b of the water-containing chamber B.

E is a continuous annular draft or hot air chamber also preferably of circular cross section and inclosed by the shell b , the top wall b' of the water-containing chamber B, an upright outer shell or wall e , a lower wall e' , and a top wall e^2 . The draft chamber E extends downwardly beneath the flues D', and its upper wall e^2 is separated from the adjacent wall b' of the chamber B. The shell e of the chamber E is formed with an outturned lower edge suitably secured, as by rivets e^3 to the outer edge of the lower wall e' of said chamber, and the upper edge of the shell e is suitably secured, as by rivets e^4 , to the top wall e^2 of said chamber. The lower wall e' of the chamber E is secured by angle pieces e^5 or similar means to the adjacent face of the shell b of the water-containing chamber B and the upper wall e^2 is provided with an outlet nipple e^6 , to which a smoke or outlet pipe, not illus-

trated, is suitably secured. Circulation pipes *ff* are passed through the top wall *e*² of the chamber E, and are secured to nipples *b*⁷ in the top wall of the chamber B.

- 5 The walls or shells of the various chambers of my steam generator may be formed of wrought iron or other suitable material, and are readily rolled or otherwise brought to the desired form, and are easily and quickly assembled. The products of combustion pass from the chamber A directly through the central portion of the water-containing chamber in slightly diverging lines by means of the flues D, and thence into the draft or hot air chamber E surrounding the upper portion of the water-containing chamber, and said products also pass through the upper portion of the water leg B' by means of the tubes D' into the lower portion of the chamber E surrounding the central portion of the water-containing chamber. These flues D D' are so relatively arranged and constructed that the draft is uniform, and effects a circulation of the heated products around the entire upper portion of the water-containing chamber.

25 The operation of my invention will be readily perceived from the foregoing description and upon reference to the drawings, and it will be particularly noted that the same is simple in construction, and practical and effective in use.

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

- 35 In a steam generator, the combination of a cylindrical shell *a* having an outwardly flaring lower end *a'*, a crowning wall *a*² having a downturned flange arranged within and secured to the upper end of the shell *a*, a cylin-

drical shell *b* of greater diameter than the shell *a* having its lower end secured to the downwardly flaring end *a'* of the shell *a* and extended beneath the same and having its upper end extended above the wall *a*², a crowning wall *b'* having a downturned flange arranged within and secured to the upper end of the shell *b*, flues D having their lower ends opening from the wall *a*² and their opposite ends discharging through the wall *b'*, said flues inclining outwardly from their lower to their upper ends, substantially horizontal flues D' arranged beneath the flues D and formed of less diameter than the flues D, said flues D' having their inner ends opening from the interior of the shell *a* and their outer ends discharging through the shell *b*, an annular wall *e'* arranged beneath the flues D' in proximity thereto and extending from the shell *b*, a cylindrical shell *e* of greater diameter than the shell *b* having an outturned lower end secured to the outer edge of the wall *e'* and having its upper extremity extended above the corresponding extremity of the shell *b*, a crowning wall *e*² having a downturned flange arranged within and secured to the upper end of the shell *e*, and pipes *ff* opening from the wall *b'* and extending through the wall *e*², substantially as and for the purpose described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 2d day of May, 1893.

WILLIAM J. RANTON.

Witnesses:

CLARK H. NORTON,
E. A. WEISBURG.