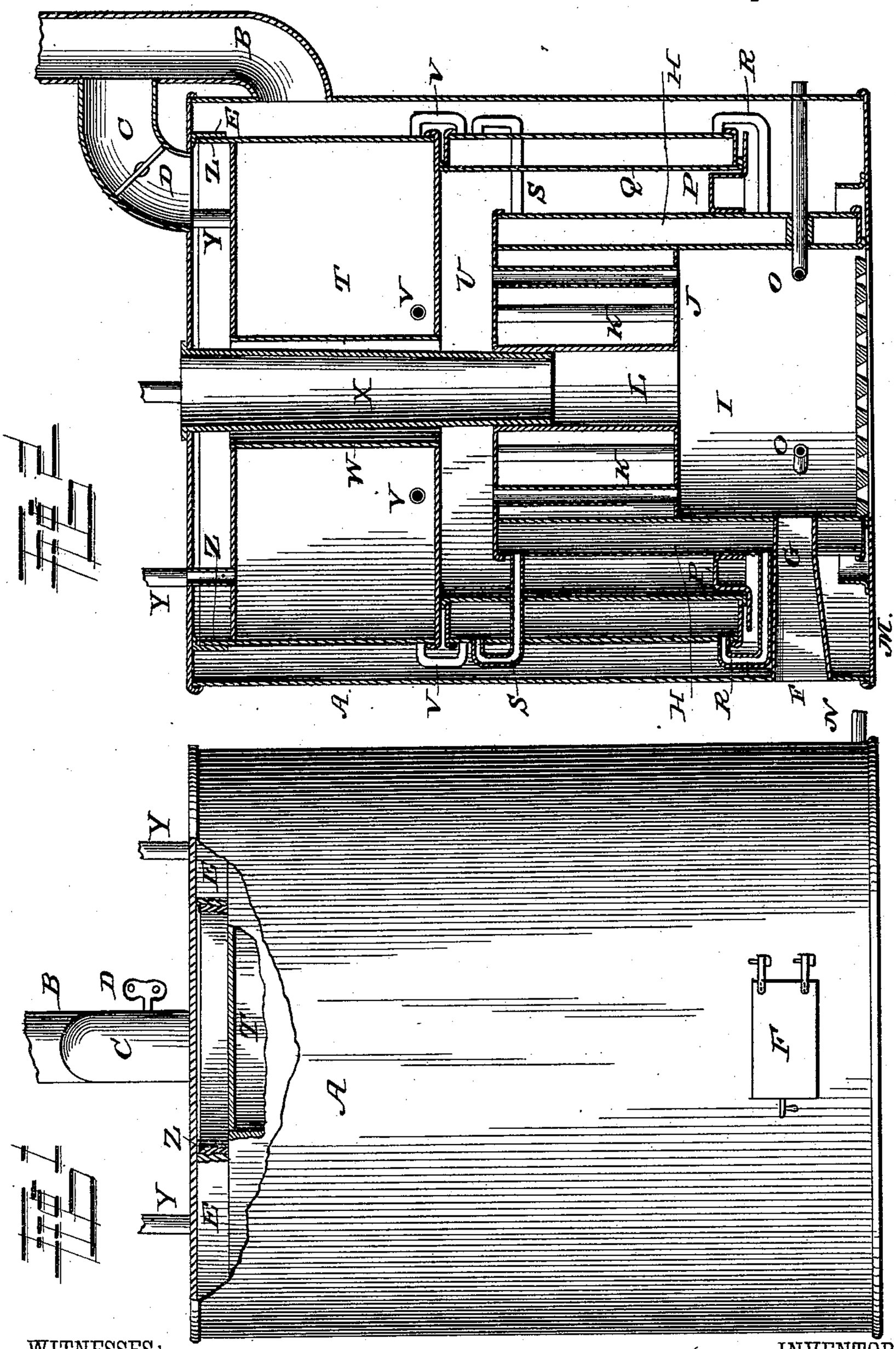
(No Model.) 3 Sheets—Sheet 1.

J. WALP.

STEAM GENERATOR.

No. 304,477. Patented Sept. 2, 1884.



WITNESSES:

Fred. L. Dieterich.

Wm. Fecher

INVENTOR.

James Walp

by Louis Bagger & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 2.

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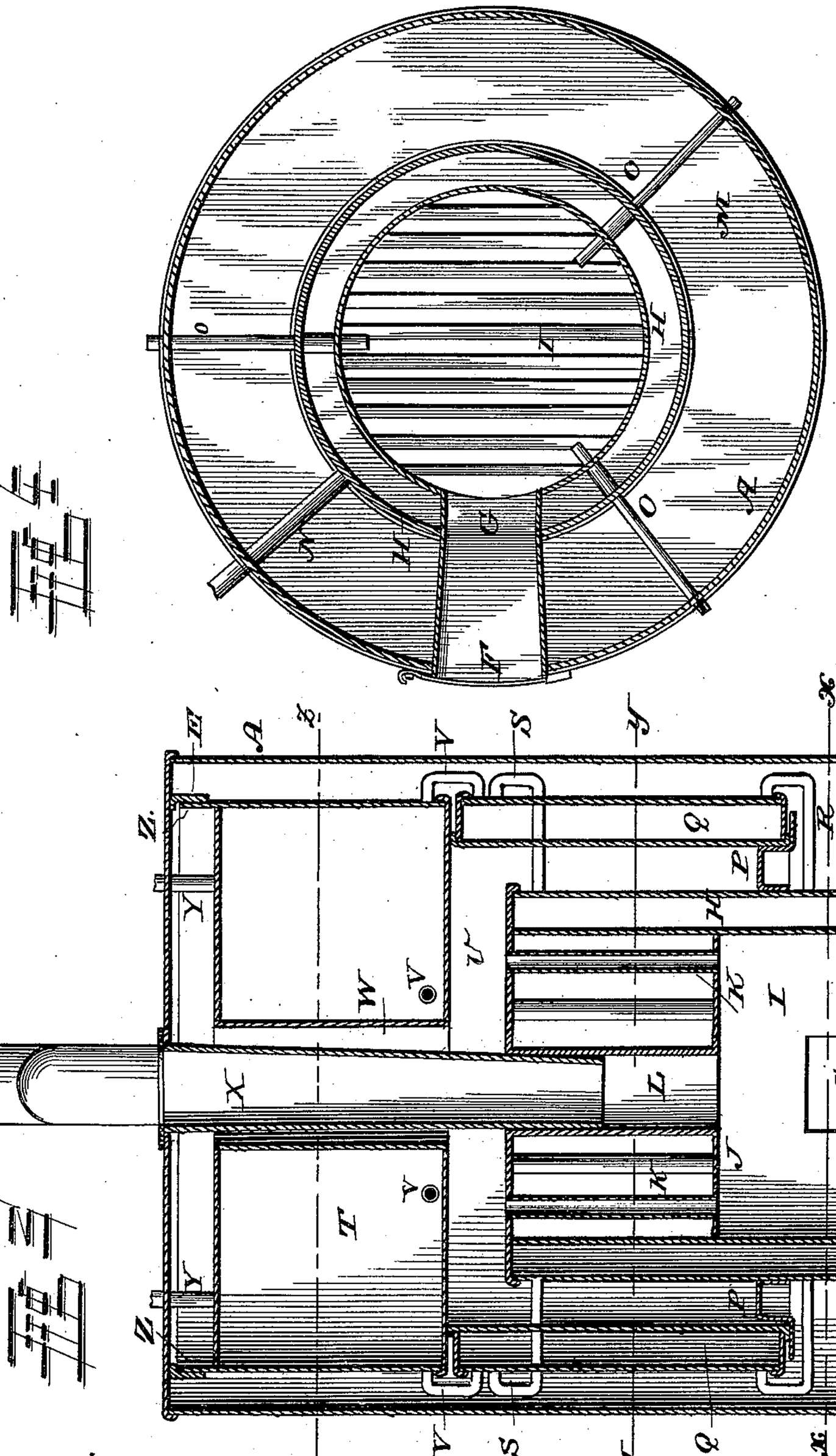

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James Walp
INVENTOR.

By Louis Bagger & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES WALP, OF LEHIGHTON, PENNSYLVANIA.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 304,477, dated September 2, 1884.

Application filed March 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES WALP, a citizen of the United States, and a resident of Lehighton, in the county of Carbon and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of my improved steam-generator, showing a portion of the outer shell broken away. Fig. 2 is a vertical section of the same. Fig. 3 is a similar view at right angles to Fig. 2; and Figs. 4, 5, and 6 are horizontal sections on lines *x x*, *y y*, and *z z*, Figs. 2 and 3.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to magazine-boilers or steam-generators; and it consists in the improved construction and combination of parts of a boiler consisting of a lower cylindrical portion containing the furnace, an annular portion surrounding the lower portion, and an upper portion placed upon the upper end of the annular portion, the whole surrounded by an outer shell or casing, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates the outer shell or casing, which surrounds the entire boiler, is provided with a laterally-extending smoke-stack, B, in its side near the top, and with an upright smoke-stack, C, extending from the top or head of the shell, and provided with a damper, D, and is provided with a downwardly-projecting annular flange, E, upon the under side of its head, near the edge of the same. Near the lower end of the shell, in the side of the same, is an opening or door, F, which corresponds to and registers with a door, G, opening through the outer and inner shells of the lower boiler, H, into the furnace I of the same, the crown-sheet J of which has a number of flues, K, passing up through the boiler-opening in the upper head of the same, and a magazine, L, passes up through the center of the boiler. The lower annular head of the boiler rests upon the base-plate M of the outer shell, and the portion of the lower boiler surrounding the furnace is provided with a feed-water pipe, N, passing through the outer shell or jacket and through the outer shell of the lower boiler, and a number of small pipes, O, pass from the outside into the furnace, serving to conduct air into the same above the fire, for the purpose of consuming the gases arising from the fuel. The outer shell of the lower boiler has a number of brackets, P, near its foot, upon which brackets the annular boiler Q rests with its lower end, the said boiler leaving a space between the outer jacket and itself and between itself and the lower boiler, and the annular boiler is provided with a number of pipes, R, at its lower end, which pass into the lower boiler near its lower end, and with a number of pipes, S, which open in its outer shell near its upper end, pass through its outer and inner shell, and open at their other ends into the upper end of the lower boiler. The annular boiler projects with its upper end a short distance above the top of the lower boiler, and an upper boiler, T, of the same diameter as the annular boiler, rests upon the top of the same, forming a smoke-space, U, between its lower head and the upper head of the lower boiler. The lower end of the upper boiler is provided with a number of pipes, V, which pass down into the annular boiler, connecting the two boilers together, and the center of the upper boiler has a flue or tube, W, through which the smoke and other products of combustion may pass upward, and through the middle of which a magazine, X, passes, which passes through the upper head of the outer jacket and connects at its lower end with the magazine of the lower boiler, forming a space between it and the central flue of the upper boiler. The upper head of the upper boiler is provided with a number of upright pipes, Y, through which the steam may pass to its destination and to the several manometers and gages, and the outer edge of the said upper head forms an upright flange, Z, which fits inside the downwardly-projecting flange upon the head of the jacket, closing all connection between the space between the boilers and the side of the jacket and the space between the heads of the upper boiler and the jacket.

It will be seen that the fuel is fed through the magazine into the furnace, the door lead-

ing into the same only serving for the purpose of inspecting the fire and otherwise attending to its burning, and the smoke and other products of combustion will ascend through the flues of the lower boiler into the space between the head of the said boiler and the lower head of the upper boiler, from whence it may ascend through the flue in the center of the upper boiler between it and the magazine into the space between the top of the upper boiler and the top of the jacket, and escape through the upright pipe in the said top, the damper of which is then open; or, if the said damper is closed, the smoke and products of combustion will be deflected by the lower head of the upper boiler and pass between the lower boiler and the inner side of the annular boiler, pass under the lower end of the said boiler, and ascend in the space between the annular and upper boiler and the jacket, passing out through the laterally-extending smoke-stack.

If desired, one or more of the boilers may be disconnected from the others by suitable cocks upon the connecting-pipes, and it will be seen that when all the boilers are used they will offer a very large heating-surface, causing a rapid generation of steam.

It will also be seen that the several parts of the boiler may be easily disconnected in moving the boiler, the several parts occupying but comparatively little space, and that also one part of the boiler may be removed, and either be repaired or replaced with a new part without the necessity of removing the entire boiler or of condemning the entire boiler on account of a portion of it becoming unfit for service.

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

In a steam-generator, the combination of a lower boiler having a furnace in its lower end, having vertical flues passing up through it, having a central magazine opening into the furnace, and provided with a feed-water pipe at its lower end, and with pipes passing through it at its lower end opening into the furnace, an annular boiler resting upon brackets upon the lower boiler, extending a distance from the lower end of the lower boiler to a distance above the top of the lower boiler, forming a space between itself and the lower boiler, and connected with the same at its upper and lower ends by means of pipes, an upper boiler resting upon the upper end of the annular boiler, connected at its lower end with the upper end of the annular boiler by means of pipes, having steam-pipes at its upper end, and having a central flue or tube and an upright flange at the edge of its head, an outer jacket surrounding the boilers, forming a space between itself and the outer sides of the boilers, having a laterally-projecting smoke-stack and an upwardly-extended smoke-stack provided with a damper, and having a downwardly-projecting flange upon the under side of its upper head, fitting around the flange upon the head of the upper boiler, and a magazine passing through the head of the outer jacket and through the central tube of the upper boiler, forming a space between itself and the said tube, and entering the upper end of the magazine of the lower boiler, as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JAMES WALP.

Witnesses:
STEPHAN WATTHER,
AARON SERFUSS.