

1,035,646.

The image contains two technical drawings of a mechanical device, labeled Fig. 1 and Fig. 2.

Fig. 1 is a side cross-sectional view of the device. It shows a large, curved, dome-shaped upper section (3) with a central circular opening (3'). Below this is a vertical cylindrical section (5) containing a series of horizontal rods or tubes (8). The base of the device is a complex, multi-tiered structure (1) that supports the main body. A large, circular component (2) is visible at the bottom right, connected to a vertical shaft (4). Various other parts are labeled with numbers: 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, and 17.

Fig. 2 is a top-down or plan view of the device. It shows the circular arrangement of the horizontal rods (8) within the cylindrical section (5). The central opening (3') is visible at the top. The base structure (1) is shown from above, revealing its internal components and the connection to the circular component (2). The same numbered labels (3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17) are used to identify the corresponding parts in this view.

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UNITED STATES PATENT OFFICE.

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STEAM-BOILER.

1,035,646.

Specification of Letters Patent.

Patented Aug. 13, 1912.

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To all whom it may concern:

Be it known that I, MINOTT W. SEWALL, a citizen of the United States, residing at New York city, borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a specification.

My invention relates to a steam boiler or generator of that type having water tubes in substantially vertical banks and upper and lower horizontal drums, and more particularly to the construction and arrangement of a superheater to be used therewith.

The invention will be understood from the following description taken in connection with the accompanying drawings in which—

Figure 1 is a vertical section through a portion of a boiler showing the disposition of the superheater therein, and Fig. 2 a top view.

Similar reference numerals indicate similar parts in the several views.

Referring to the drawings, the numeral 1 designates the furnace, 2 the bottom drum, 3 the top or steam and water drum, and 4 the vertical connecting tubes, it being understood that the boiler comprises two or more banks of similar tubes with the drums connected together in a well-known manner, the upper drum 3' of the second bank being shown in Fig. 2. To meet the want of a satisfactory superheater for this type of boiler I provide an upper box or manifold 5 to which the steam supply pipes 6 are connected. The box 5 is placed above and may be supported upon one of the steam and water drums in any convenient way and is divided into two parts by a transverse partition 7. Into the box 5 are expanded superheating tubes 8 curved at their upper ends and their longer legs extending downwardly with the lower ends expanded into a box or manifold 9 lying in a direction parallel to that of the box 5. As shown in the drawings, the box 5 is preferably placed above the steam drum of the front bank of tubes, and the box 9 directly above the rear of the furnace roof.

The front wall of the furnace is built up of fire bricks 10 partially inclosing the tubes 8, and an outer covering of asbestos and metal plates 11, the wall being supported by said tubes. The brick-work inclosing the tubes extends from the lower manifold 9 to the roof of the boiler and the metal plates

11 may be supported upon the furnace roof. The lower portions of the tubes 8 may be protected by a fire-brick wall 12 extending from the furnace roof a suitable distance, as shown in Fig. 1.

In the operation of the boiler the steam passes through the supply pipe 6 into one of the chambers of the upper box 5 formed by the partition 7, thence down the superheating tubes 8 leading from said chamber to the lower box 9, and thence upwardly through the tubes 8 which are expanded into the box 5 on the opposite side of said partition, from which part of the box it may pass out through flange 13.

As shown in Fig. 1, I provide a baffle wall 14 to cause the gases to pass upward longitudinally of the front bank of tubes and into contact with the upper portions of the superheating tubes, thence across and down through the second bank of tubes following the course usual in this type of boiler. By placing the superheating tubes in the front wall of the boiler I am enabled to provide this type of boiler with a satisfactory superheater which has not heretofore been possible owing to the setting of the tubes and drums. It will also be noted that the furnace opens directly into the first pass, and that the superheating tubes are so located as to be exposed to the hottest part of the flame.

As before stated, in the type of boiler shown by me the steam drums are connected in a well-known manner, that is the steam from all of the drums is collected in one of the drums from which it is drawn. I have modified such usual arrangement in the present construction by providing a steam collecting box 15 connected to the drum 3' by a series of short nipples 16, the steam passing from the box 15 through the pipe 6 to the upper manifold 5.

What I claim and desire to secure by Letters Patent of the United States is:—

A steam boiler comprising a furnace, a bank of vertical heating tubes, lower and upper drums into which said tubes are expanded, a horizontal manifold supported above the upper drum, steam-supply pipes and superheating tubes connected to said manifold, said superheating tubes extending downwardly in proximity to the heating tubes and serving as a support for the front casing, a second manifold in which the lower

ends of said superheating tubes are expanded, said last-named manifold being supported above the rear of the furnace roof, and a refractory covering for the lower ends of the
5 superheating tubes extending upwardly from the lower manifold.

In testimony whereof I have hereunto

signed my name in the presence of two subscribing witnesses.

MINOTT W. SEWALL.

Witnesses:

HUGH McDOUGALL,
EUGENE P. TERRY.