No. 799,590. PATENTED SEPT. 12, 1905.

J. R. BROWN.

STEAM BOILER.

APPLICATION FILED MAY 24, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

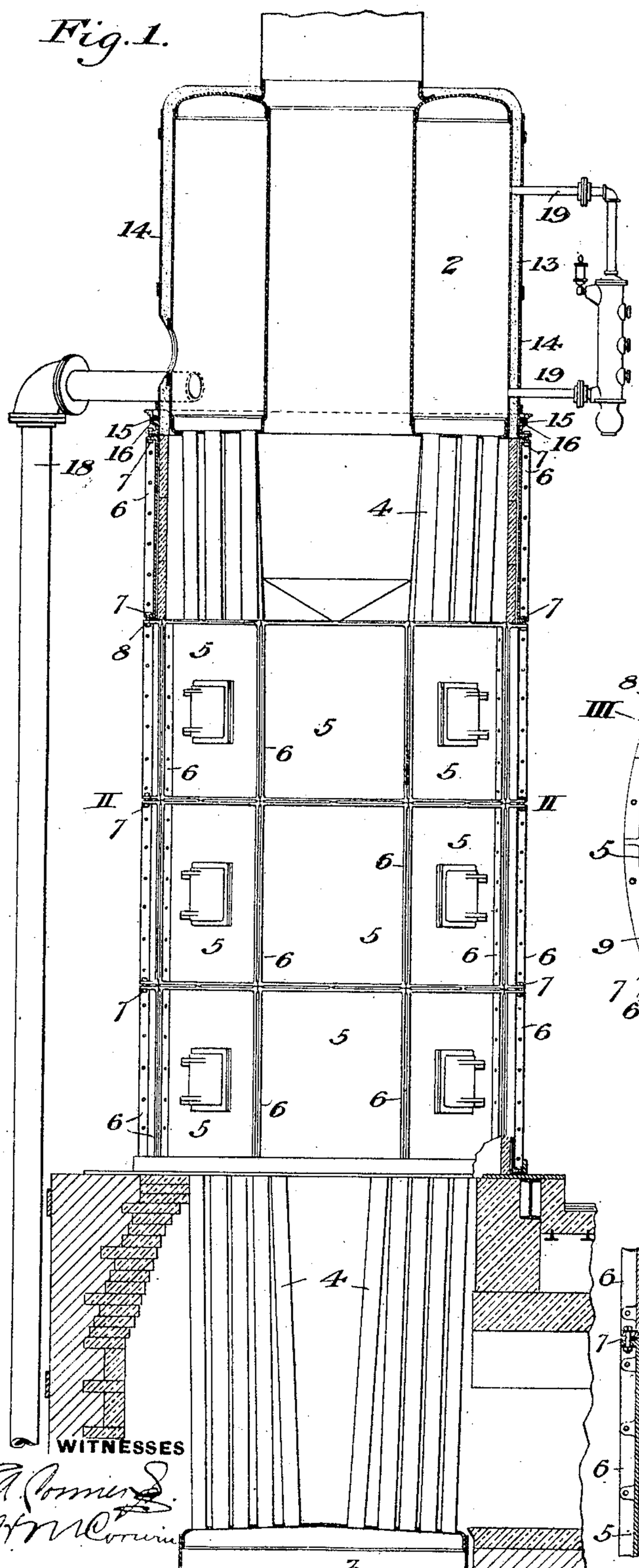


Fig. 4.

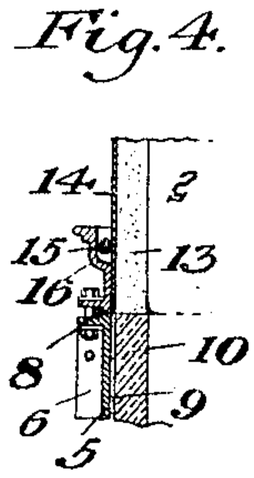


Fig. 2.

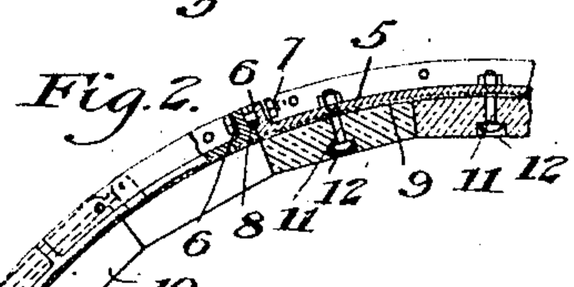
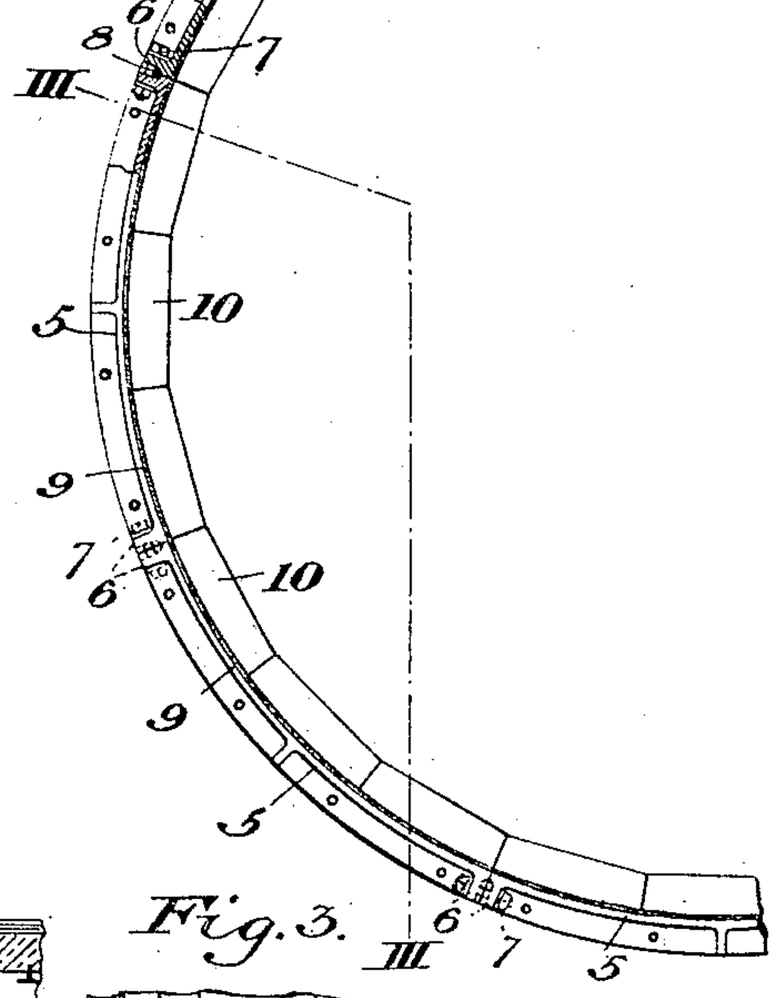
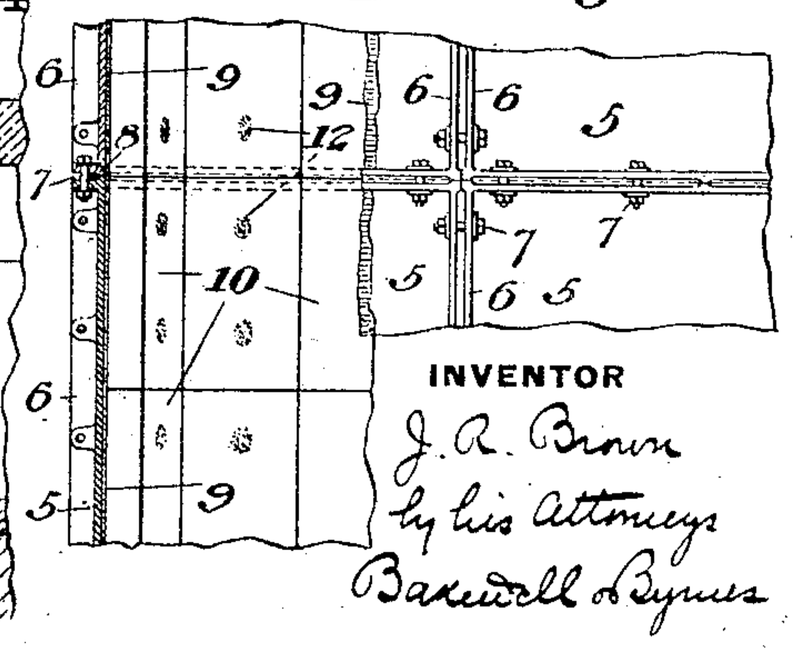


Fig. 3.





WITNESSES

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2 SHEETS—SHEET 2

Fig. 7.

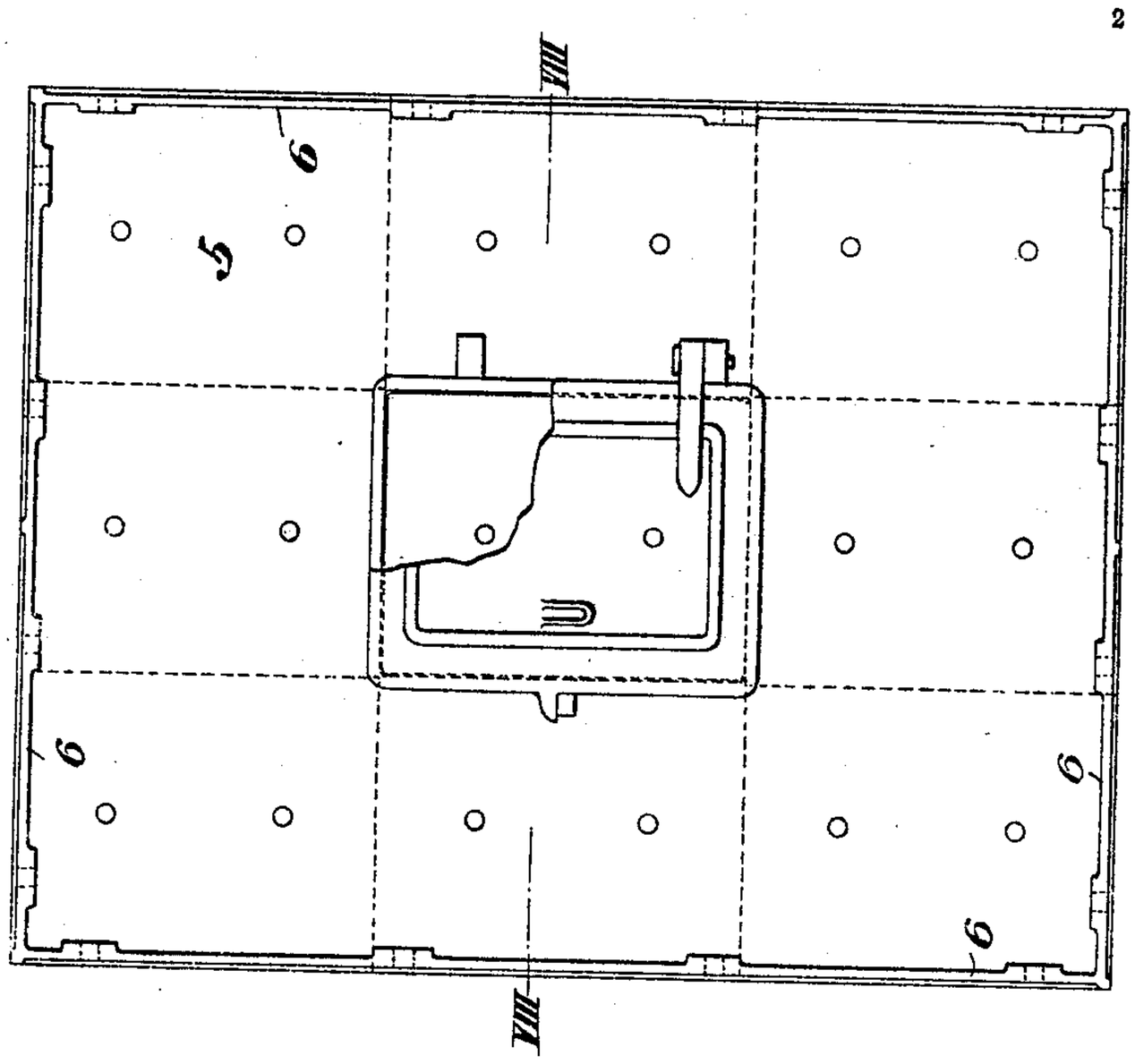


Fig. 8.

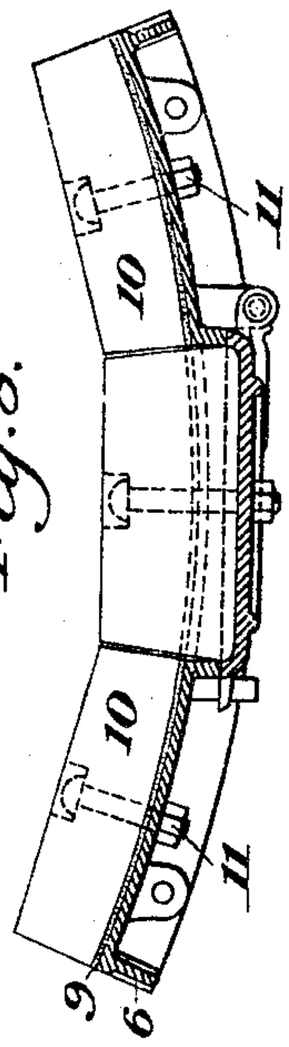


Fig. 5.

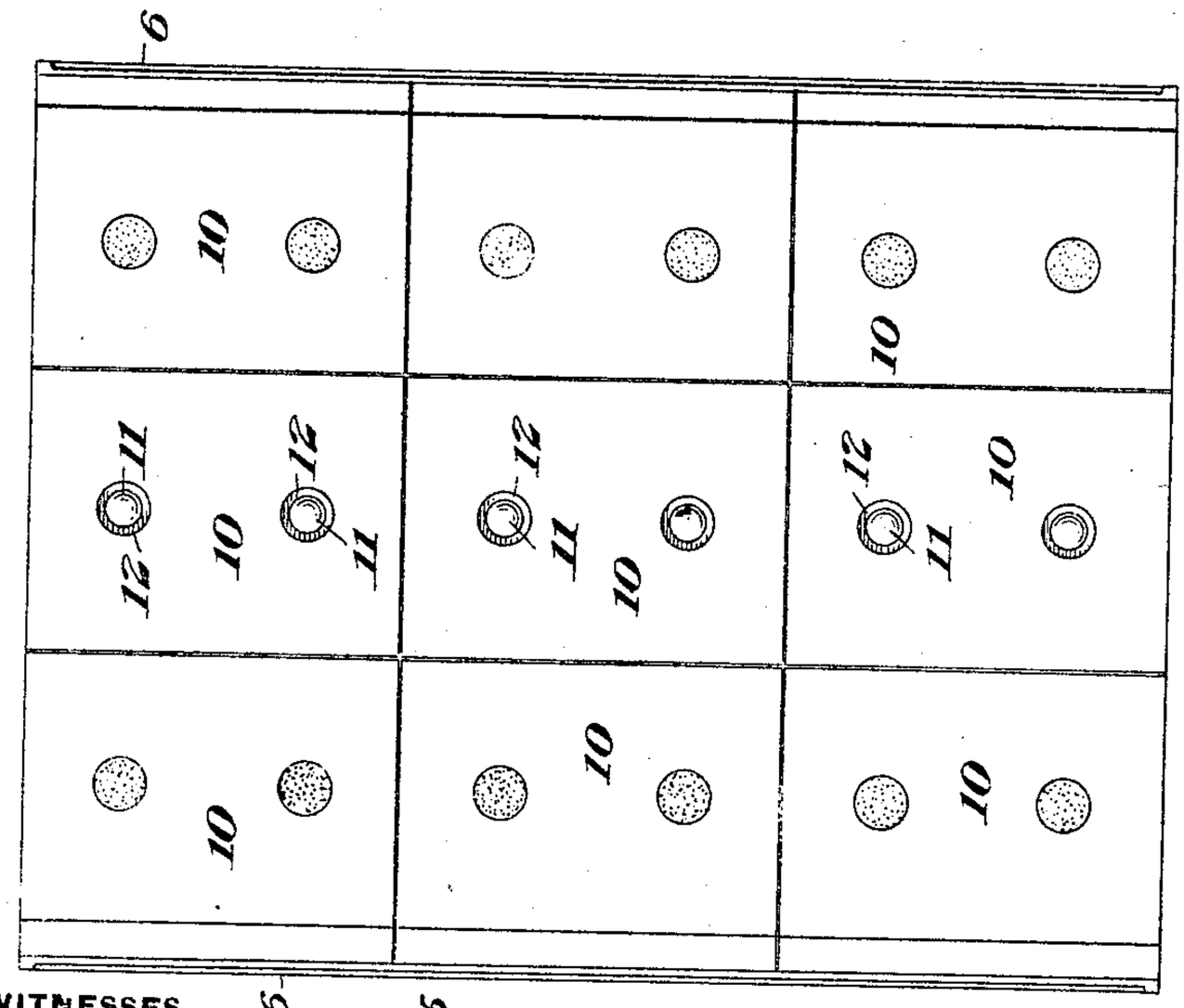
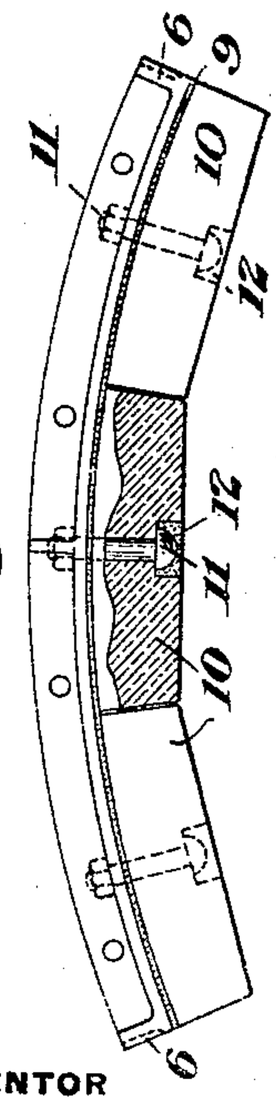


Fig. 6.



WITNESSES

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his Attorneys

UNITED STATES PATENT OFFICE.

JOHN ROWLAND BROWN, OF MANSFIELD, OHIO, ASSIGNOR TO THE AULTMAN & TAYLOR MACHINERY COMPANY, A CORPORATION OF OHIO.

STEAM-BOILER.

No. 799,590. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed May 24, 1904. Serial No. 209,451.

To all whom it may concern:

Be it known that I, JOHN ROWLAND BROWN, of Mansfield, Richland county, Ohio, have invented a new and useful Improvement in Steam-Boilers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section, of a steam-boiler having a casing constructed in accordance with my invention. Fig. 2 is a horizontal section, on the line II II of Fig. 1, on a larger scale. Fig. 3 is a vertical section on the line III III of Fig. 2. Fig. 4 is a detail of the joint between the casing and drum. Fig. 5 is an inside view of one of the shell-sections. Fig. 6 is a plan view of the same, partly broken away. Fig. 7 is an external view of one section, and Fig. 8 is a horizontal section on the line VIII VIII of Fig. 7.

The purpose of my invention is to provide a casing for vertical boilers which will not only serve as a more effective heat retaining and insulating device than has heretofore been employed, but will also enable the easier removal of the tubes and will afford a simpler and better construction.

In the drawings, 2 3 are the drums of a boiler, and 4 is the connecting bank of upright tubes. These tubes are inclosed in a casing which consists of an exterior shell made up of iron sections 5, each preferably one-eighth of a circumference in extent, having at their edges bolting-flanges 6, which are held together by bolts 7, calking material 8, preferably of asbestos, being interposed between the flanges. These iron segments are lined on the interior with asbestos sheets 9, which constitute heat-insulating material, and within that is a lining of bricks or tiles 10, secured to the iron sections by bolts 11, whose heads are fitted in countersunk holes 12 on the inner faces of the bricks. The asbestos lining is thus clamped between the iron cell and the interior lining of bricks and constitutes an efficient and simple means of increasing the heat-retaining properties of the casing. The sections 5 are arranged in vertical series, each section being directly above and substantially coterminous laterally with the corresponding sections above and below, and the interior bricks 10 are secured to the individual sections 5, so that if a vertical row of the sections be unbolted and detached they will afford a vertical opening, exposing the tubes opposite thereto throughout nearly their entire length, and will thus render the tubes easily removable laterally from the boiler and will make it unnecessary to remove them endwise through manholes in the upper drum, as has been the practice with boilers of this kind heretofore generally employed. This feature of having a sectional boiler-casing arranged so that by removing sections thereof a vertical opening can be exposed from the top nearly to the bottom of the bank of tubes I believe to be new and intend to claim it whether constructed in the manner illustrated in the drawings or modified and embodied in other constructions.

The composite iron, asbestos, and brick casing above described extends to the top of the bank of tubes at their juncture with the steam and water drum 2. This drum 2 is surrounded by a lagging 13, of asbestos or like insulating material, incased in a sheet-iron jacket 14, the lagging and its jacket being attached to the drum, so as to move therewith when the drum rises and falls by virtue of the expansion and contraction of the boiler, due to the changes in heat. For the purpose of preventing this vertical motion of the drum from exposing openings in the setting through which air can enter I provide a yielding packing-ring 15, preferably of asbestos rope, which is placed circumferentially around the jacket 14 and bears on its outside in a pocket 16, formed by an upward projection from the flange at the top of the main casing of the boiler. The sheet-metal casing 14, moving with the drum 2, rises and falls within the asbestos packing-ring 15, which closely seals the joint and prevents the passage of air or furnace-gases. The packing-ring and pocket 16, in which it is set, being applied to the main or lower casing of the boiler, are stationary, while the jacket 14 moves with the drum. The circulation-pipes 18 and the water-column pipes 19, which extend from the drum through the lagging 13 and jacket 14, therefore move with these parts, and it is not necessary, as heretofore, to provide movable expansion boxes or doors through which they pass. In this way I simplify and improve the construction.

I claim—

1. In a steam-boiler, having tubes and an upper drum, the combination of a metallic casing for the tubes, a casing for the drum, and an expansion-joint between the two casings, substantially as described.

2. A steam-boiler having an upper drum and tubes, a casing for the drum moving therewith, and a packing for said casing; substantially as described.

3. A steam-boiler having an upper drum and tubes, a casing for the drum moving therewith, a second stationary casing for the tubes, and a packing between the casings; substantially as described.

4. In a steam-boiler, having tubes and an upper drum, carried thereon the combination of a metallic casing for the tubes, a heat-insulating lining for the casing, a casing attached to the drum and moving therewith, and a packing between the two sections whereby a relative movement is permitted, substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN ROWLAND BROWN.

Witnesses:
JOHN MILLER,
H. M. CORWIN.