

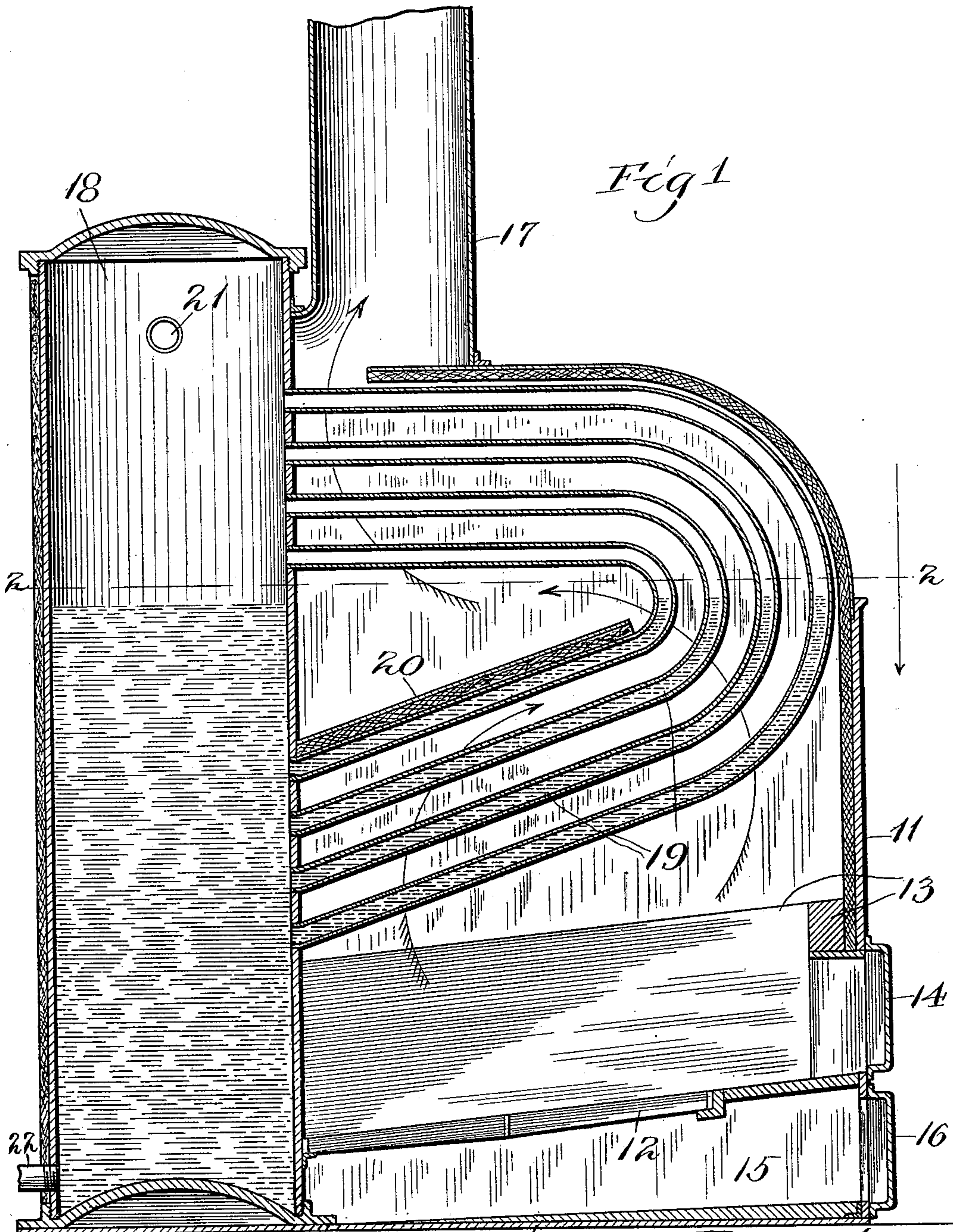
No. 656,193.

Patented Aug. 21, 1900.

W. L. JANCEY.
WATER TUBE BOILER.
(Application filed Apr. 18, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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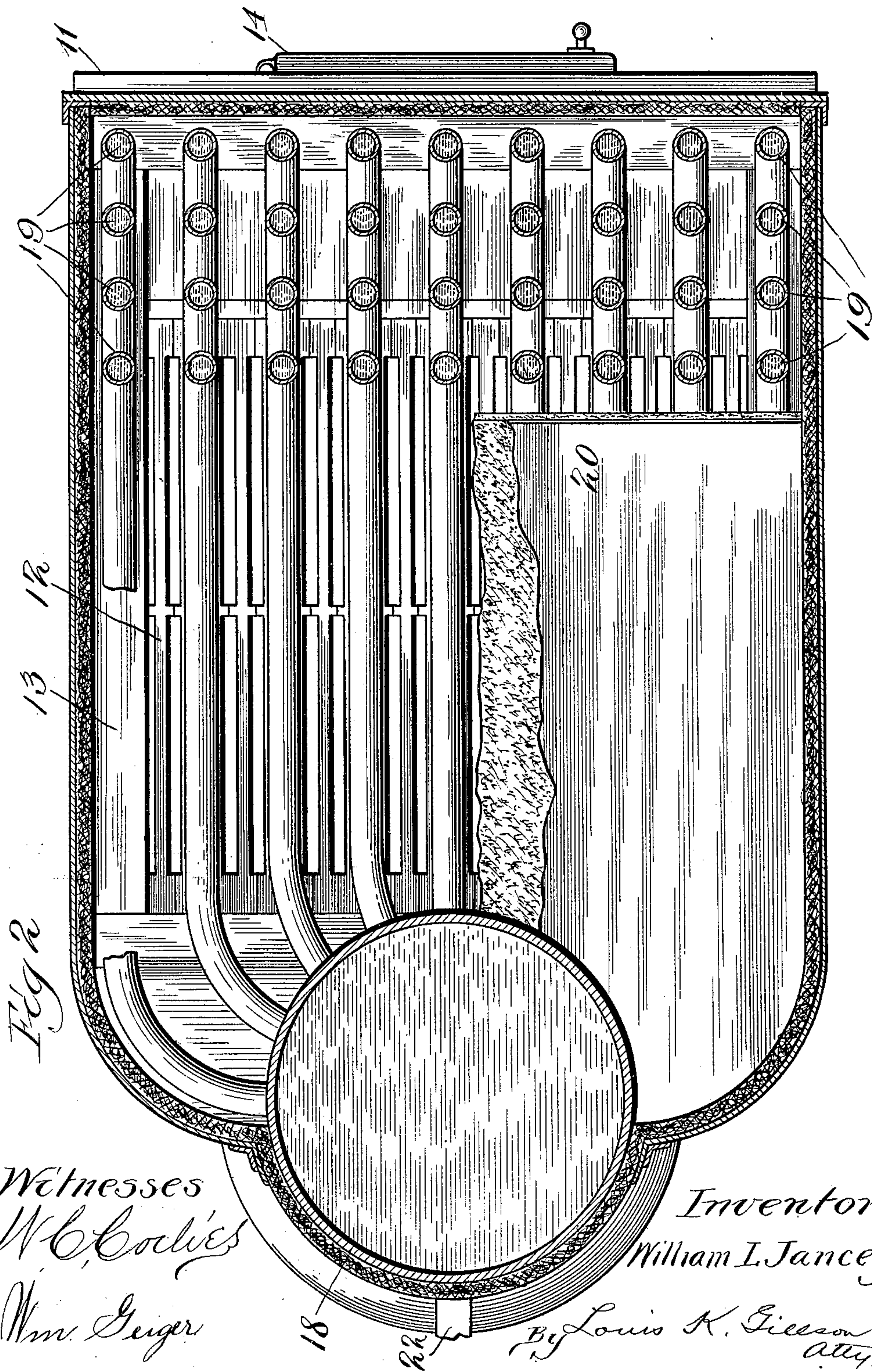
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UNITED STATES PATENT OFFICE.

WILLIAM L. JANCEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO BUGBEE & LAYCOCK, OF SAME PLACE.

WATER-TUBE BOILER.

SPECIFICATION forming part of Letters Patent No. 656,193, dated August 21, 1900.

Application filed April 18, 1900. Serial No. 13,368. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. JANCEY, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Water-Tube Boilers and Furnaces Therefor, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

The invention as illustrated is applied more particularly to marine boilers, but is applicable to boilers adapted for service in any situation.

The objects of the invention are to increase the efficiency of steam-boilers of this type and to render them compact and simple of construction.

The invention consists in the construction hereinafter fully described, and illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section of the water-tube boiler and its furnace; and Fig. 2 is a plan section on the line 2 2 of Fig. 1, some of the parts being broken away.

I have shown in the drawings a furnace-setting, the floor of the furnace being shown at 10, its front at 11, its grate at 12, the lining of its fire-box at 13, its fire-door at 14, its ash-pit at 15, its ash-pit door at 16, and its smoke-stack at 17. The walls of the furnace are shown as consisting of sheet metal lined with asbestos.

At 18 there is shown a vertical water-drum, forming a part of the steam-boiler and being inclosed within the walls of the furnace and at the rear of its chamber, this drum preferably extending from the furnace-floor to or through its top. A plurality of U-shaped water-tubes 19 have their ends set through the wall of the drum 18 in vertical plane, the tubes bowing forwardly into the combustion-chamber of the furnace, some of them extending to the front plate of the latter. These tubes may be as numerous as desired. As shown, they are arranged in nine sets of four tubes each. The lower arm of each U-shaped tube inclines upwardly from the drum, and the upper arm of each may be substantially horizontal, as shown.

A deflecting-plate 20, composed of sheet

metal having an under lining of asbestos, projects forwardly from the back of the combustion-chamber and is supported by the topmost of the lower arms of the water-tubes, space being left between the forward end of this plate and the front plate of the furnace for the passage of the products of combustion, and the line of draft being thereby caused to follow substantially the direction of the water-tubes throughout their entire length, as indicated by the arrows.

The upper end of the drum 18 forms the steam-dome, and a steam-pipe 21 leads therefrom. A pipe 22 is shown as entering the lower end of the drum and will serve for the purposes of water-feed or sediment blow-off.

In order to secure the most efficient service, the water-line is maintained substantially at the level of the line 2 2 in Fig. 1, and the upward inclination of the lower portion of the water-tubes insures a rapid circulation. The steam generated within these tubes mechanically carries up with it a considerable quantity of water, and the generation of steam is the most active in the upper portions of the tubes.

The marked advantage in this boiler over those of the same class in common use arises from the vertical position of the drum 18, whereby a free and uninterrupted circulation of water therein is secured. The return of the tubes to the drum being above the water-line, such of the contents thereof as are discharged in liquid form falls from the mouths of the tubes. The water-supply to that portion of the tubes to which the heat is first applied is direct and the retardation of circulation by friction due to the necessity of conveying the water through down pipes is entirely avoided. The discharge of the intermingled steam and water from the upper end of the tubes being above the water-line, the tendency to foaming is greatly lessened. The vertical arrangement of the drum serves a further useful purpose in providing for the easy precipitation of sediment, and the lower end of the drum being below the fire-box there is no agitation of the sediment after its precipitation. The boiler is peculiarly well adapted for marine service, for the reason that its center of gravity is very low.

It will be understood that I do not limit

myself to the peculiar arrangement of furnace herein shown and described, as any arrangement whereby the products of combustion are brought to the lower arms of the U-shaped tubes and caused to circulate among the tubes may be followed.

I claim as my invention—

10 In a water-tube boiler and furnace therefor, in combination, a furnace having a combustion-chamber; a vertical drum, a plurality of bowed circulating-tubes projecting into the combustion-chamber, both ends of each tube entering the drum above the fire-grate and at

different elevations, the lower arm of each tube being inclined upwardly from its end, 15 and the upper arm thereof being substantially horizontal; and a deflecting-plate extending from the drum between the two arms of the several tubes, whereby the line of draft is caused to substantially follow the 20 line of the tubes.

WILLIAM L. JANCEY.

Witnesses:

PAUL CARPENTER,
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