

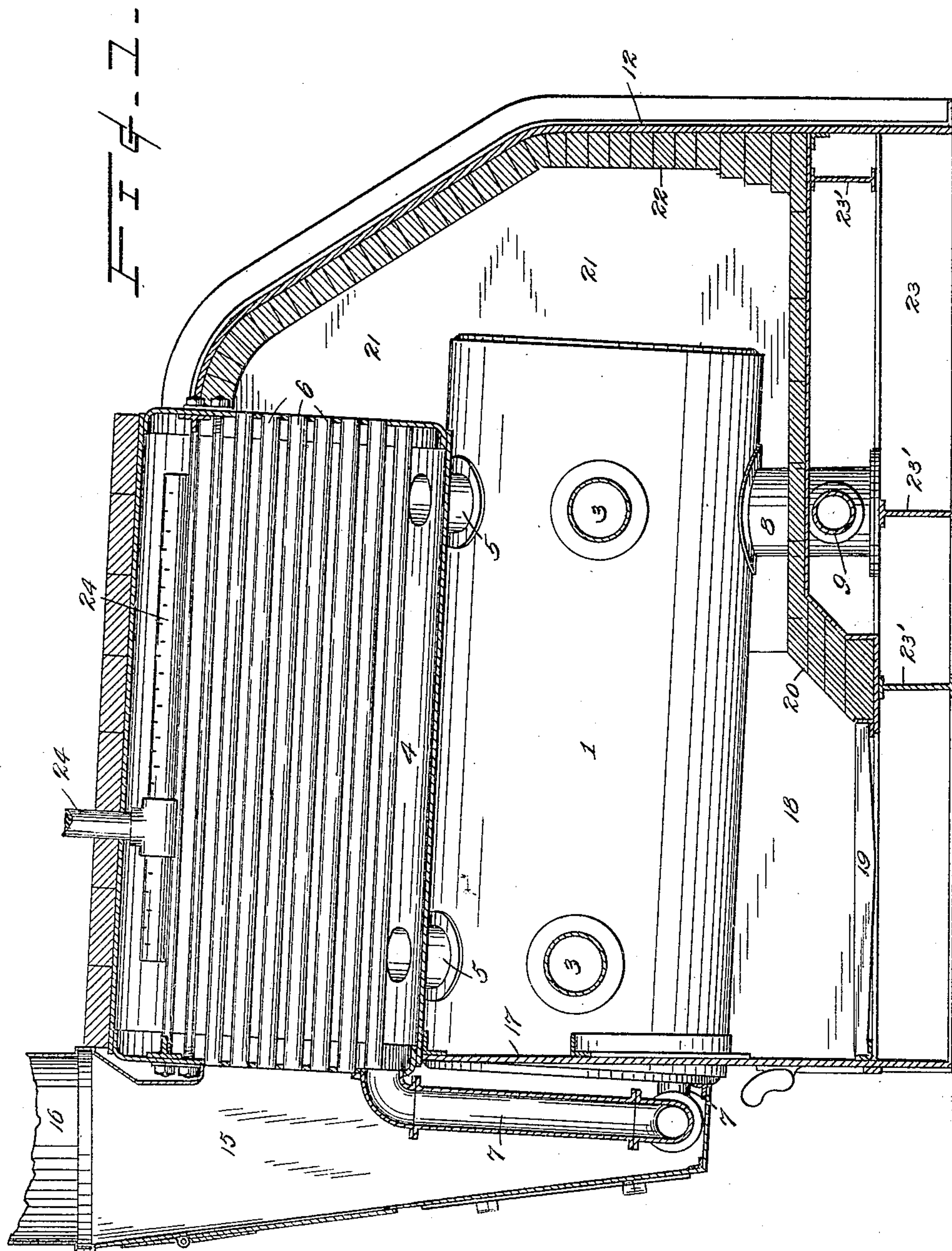
No. 816,530.

PATENTED MAR. 27, 1906.

C. C. CHERRY.
STEAM BOILER.

APPLICATION FILED MAY 8, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

Paul Laines.
Edw. Wright

INVENTOR.
C. C. Cherry
BY *Pierre Barner*
ATTORNEY.

No. 816,530.

PATENTED MAR. 27, 1906.

C. C. CHERRY.
STEAM BOILER.

APPLICATION FILED MAY 8, 1905.

2 SHEETS—SHEET 2.

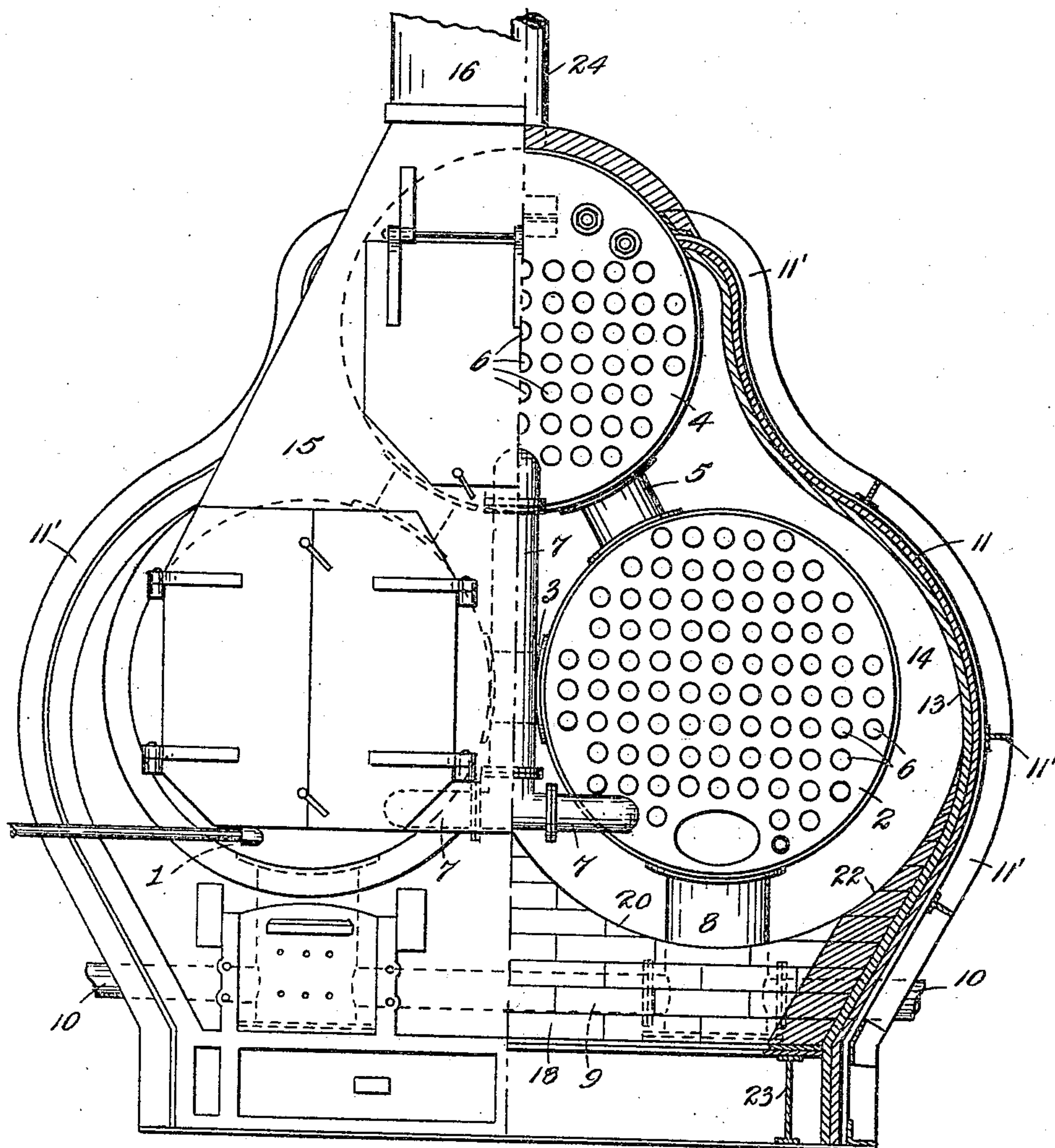


FIG. 2.

WITNESSES:
Paul Barnes
Edw. Wright

INVENTOR.
C. C. Cherry
BY *Pierre Barnes*
ATTORNEY.

UNITED STATES PATENT OFFICE.

COPWAY C. CHERRY, OF SEATTLE, WASHINGTON.

STEAM-BOILER.

No. 816,530.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed May 8, 1905. Serial No. 259,307.

To all whom it may concern:

Be it known that I, COPWAY C. CHERRY, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

10 Figure 1 is a longitudinal vertical section of a steam-boiler embodying my invention, and Fig. 2 is a front view of the same shown partly in section.

15 The object of my improvements is to provide a steam-boiler which will be extremely efficient in operation, easy to keep clean and in working order, and one in which the hot combustion-gases from the furnace are so controlled and directed that the combustible
20 products thereof are entirely consumed and the heat therefrom usefully applied to generate steam.

25 The invention consists in the novel arrangement, combination, and adaptation of parts, as will be now described with reference to said drawings.

Two steam-generating drums 1 and 2 are disposed side by side and are communicatively connected with each other by water-flues 3 and with a superposed drum 4 by flues 5 and are severally provided, as ordinary, with longitudinal boiler-tubes 6; but in this instance the lower drums are provided with as many tubes as can be used without unduly
35 weakening the heads of the drums to which connected, while the tubes in the upper boiler are only carried part way up, so as to furnish a clear space thereabove to be occupied by the steam. The upper drum is likewise communicatively connected with the lower drums by a pipe or pipes, such as 7, forming downflow water-passages, whereby the circulation of the boiler is maintained at all times and is positive in action. Water-legs 8 are desirably connected to the bottoms
45 of the lower drums adjacent of their rear ends and are connected with each other by a cross-pipe 9 and are provided with side outlets 10, through which the collected sediment is removed.
50

A sheet-metal casing formed of side walls 11, with suitable strengthening-bars, as 11', and a rear wall 12, incloses said lower drums and also a part of the upper drum and is lined
55 throughout with asbestos 13 or other like substance which is a poor conductor of heat.

Said side walls are curved to conform somewhat to the contour of the adjacent surfaces of the drums and provide belt-passages 14 thereabout, and the wall 12 is positioned at
60 its lower end at some distance from the back ends of the drums and thence is inclined forward, so as to direct the combustion-gases into the tubes of the upper drum.

At the front end of the boiler is an uptake
65 15, into which said boiler-tubes exhaust the smoke and is conveyed therethrough to a stack 16. The space between the several drums and between the latter and the side walls of the casing is closed by a wall or partition 17, positioned at or adjacent to the
70 front ends of the drums.

Beneath the lower drums is a furnace 18, provided, as usual, with gate-bars 19 and a bridge-wall 20. The walls of the casing
75 interiorly of the aforesaid lining 13 are upon each side of the furnace and about the combustion chamber or space 21 at the rear of the drums further protected by fire-brick 22 or the like. The lower edges of the casing are connected
80 or tied together by a frame comprised of longitudinal and transverse bars, such as 23 23', and upon which framework is supported the boiler proper.

It will be apparent that the combustion
85 products from the furnace will in their passage to the stack surround the peripheral surfaces of the lower drums, taking an upwardly and backward course, and act against the exposed under surface of the upper drum, thus
90 imparting a large proportion of its heat directly through the drum-shells to the contained water. The flames and hot gases are then diverted into the combustion-chamber and from there through the various tubes of
95 all of the drums into the uptake. The water within the drums is acted upon by the heat to create a strong upward current of mingled water and steam through the flues 5 to the upper drum, wherein the steam separates and
100 is drawn off either directly or through a "dry-pipe" 24. The water having in the upper drum parted from the steam is replaced by hotter water and forced to descend to the lower drums by the return-pipes 7, there-
105 by creating a perfect circulation. The flues 3 meanwhile permitting the flow of water in either direction between the lower drums insures the equalizing of pressures or duty therein.
110

In the illustrated embodiment I show the preferred construction of my invention; but I

wish it to be understood that I do not limit myself to the same, as changes can obviously be made thereto without departing from the essential characteristics of the invention.

5 For example, instead of using three drums two or more could be used so long as they are positioned at different heights. Furthermore, instead of carrying the combustion-gases forwardly through the tubes of all of
10 the drums the lower ones only may be used in this way and after passing through a chamber provided at the front end be returned through the tubes of the upper drum to the stack connections located at the rear end.

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

1. In a boiler, a pair of lower drums and an upper drum communicatively connected, a
20 casing surrounding the sides and rear end of the lower drums and being spaced therefrom and extending upwardly and engaging the sides and rear end of the upper drum at points adjacent its top, and an uptake at the front
25 end communicating with each of said drums.

2. In a boiler, a pair of lower and an upper drum, communicatively connected, a casing forming passages about said drums, the rear wall of said casing being inclined forward and
30 terminating at the upper drum to direct the combustion-gases into said upper drum, and an uptake communicating with each of said drums at the front ends thereof.

3. In a boiler, a pair of lower drums hav-
35 ing tubes extending therethrough, an upper drum having tubes extending therethrough

and a steam-space above the tubes, a casing surrounding and spaced from the lower drums and extending upwardly to engage the upper drum at points in alinement with the upper
40 tubes thereof, and an uptake at the front end communicating with each of the drums.

4. In a boiler, a plurality of intercommu-
nicated drums disposed at varying eleva-
45 tions, and a curved casing spaced from the sides and rear ends of the lower drums and extending upwardly and inwardly and spaced from the upper drum, the rear wall of said casing being inclined to direct the combustion-
50 gases into said upper drum.

5. In a boiler, intercommunicating drums disposed at varying elevations, a casing spaced from said drums and following the general outline thereof to provide passages
55 about the drums, the rear end of the casing extending inwardly to direct the combustion-gases into the upper drum.

6. In a boiler, a pair of lower and an upper drum each communicatively connected to the other, and a casing spaced from and follow-
60 ing the curvature of the sides of the lower drums and thence extending upwardly and inwardly and terminating adjacent the upper portion of the upper drum and in engage-
65 ment with the latter.

In testimony whereof I affix my signature in presence of two witnesses.

COPWAY C. CHERRY.

Witnesses:

PIERRE BARNES,
W. L. FROSS.