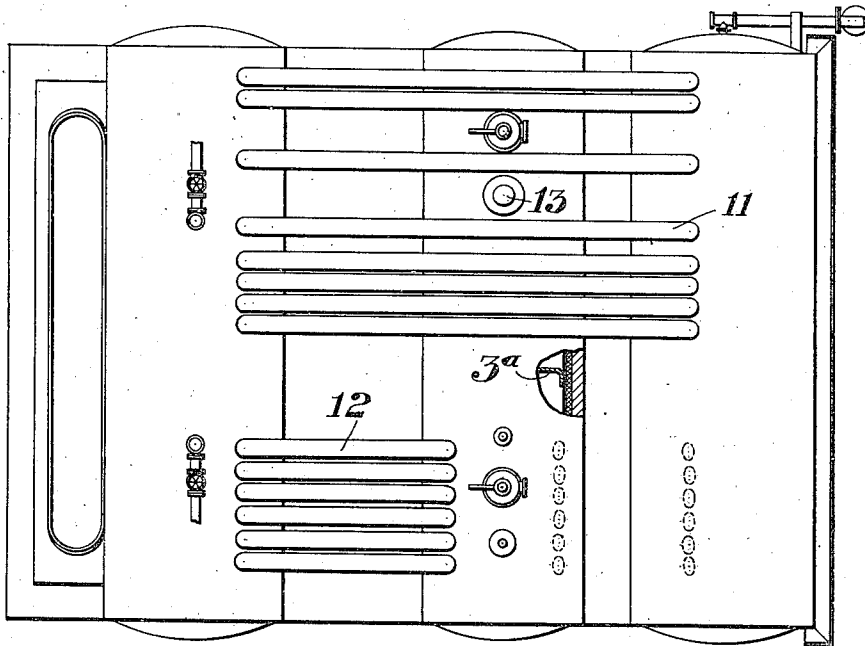


J. E. BELL.
WATER TUBE BOILER.
APPLICATION FILED OCT. 19, 1908.

1,045,114.

Patented Nov. 26, 1912.
2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

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INVENTOR

Jno. E. Bell,
by Robert H. Dymally, Attorney,
his Atty.

UNITED STATES PATENT OFFICE.

JOHN E. BELL, OF NEW YORK, N. Y., ASSIGNOR TO THE BABCOCK & WILCOX COMPANY,
OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

WATER-TUBE BOILER.

1,045,114.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed October 19, 1908. Serial No. 458,364.

To all whom it may concern:

Be it known that I, JOHN E. BELL, of the city, county, and State of New York, have invented a new and useful Improvement in Water-Tube Boilers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section, and Fig. 2 a plan view, of one form of boiler embodying my invention.

My invention relates to water tube boilers having at least three upper drums or receptacles; and it consists in passing the steam from the foremost of the top shells or drums of the boiler direct into a rear upper shell or drum and thence into an intermediate upper shell or drum between the rear and front drums.

In the drawings, in which I show the invention applied to a superheater boiler, 2, 3 and 4 indicate top shells or drums of the boiler, (in this case three in number) 5 the bottom shell or mud drum, and 6 the lower shell of the superheater. The shells 2 and 4 are connected with the shell 5 by the banks of water tubes 7 and 8, while the shell 3 is connected with the lower shell 6 by the superheater tubes 9. The water spaces of the steam and water drums or shells 2 and 4 are directly connected by water circulators 10, and steam tubes 11 lead from the steam space of drum 2 to that of drum or shell 4. Steam tubes 12 lead the steam from drum 4 back to intermediate drum 3, which in this form is the upper drum of the superheater forming the middle pass. The steam by its passage through the pipes 11, shell 4, pipes 12 and shell 3, loses its moisture to a large degree and in the present case passes down through some of the superheater tubes 9 to drum 6, and thence back through others to the steam outlet 13 from this drum 3. The drum 3 preferably has an intermediate transverse partition 3*, the tubes 12 entering it on one side of this partition and the steam outlet 13 being on the other side. The tubes 11 are preferably at one

side, as shown in Fig. 2, so as not to interfere with return steam tubes 12. The water circulators 10 extend between the superheater tubes and may be arranged in groups or singly. The drum 6 is connected with mud drum 5 by valved pipe or pipes 14, preferably at the ends. In this way the superheater may be flooded, and may be used as part of the water heating surface of the boiler. In this case the drum 3 may be a steam and water drum.

More than three top shells can be readily used, the middle drum may have water tubes leading to the mud drum, any of the intermediate top shells may be connected by steam tubes with a rear shell, and other variations may be made without departing from my invention.

I claim:—

1. A tubular boiler, comprising three upper shells, a lower shell or shells having water tubes connecting with the foremost upper shell and the rearmost upper shell, a superheater between two banks of water tubes and having a lower steam chamber connected with the upper central chamber by tubes, a steam pipe connecting the outer upper shells with each other, and a steam pipe connecting one of said outer shells with the upper steam chamber of the superheater; substantially as described.

2. A tubular boiler, comprising a mud drum, a plurality of upper steam and water shells connected to the mud drum, a water connection between the steam and water shells, a steam connection between the steam and water shells, and a super-heater between the banks having an upper and lower drum connected to each other, and a steam connection between one of the steam and water drums and the upper super-heater drum; substantially as described.

In testimony whereof, I have hereunto set my hand.

JOHN E. BELL.

Witnesses:

WM. C. BELL,
G. K. WANNEMACHER.