

J. E. BELL.
SUPERHEATER BOILER.

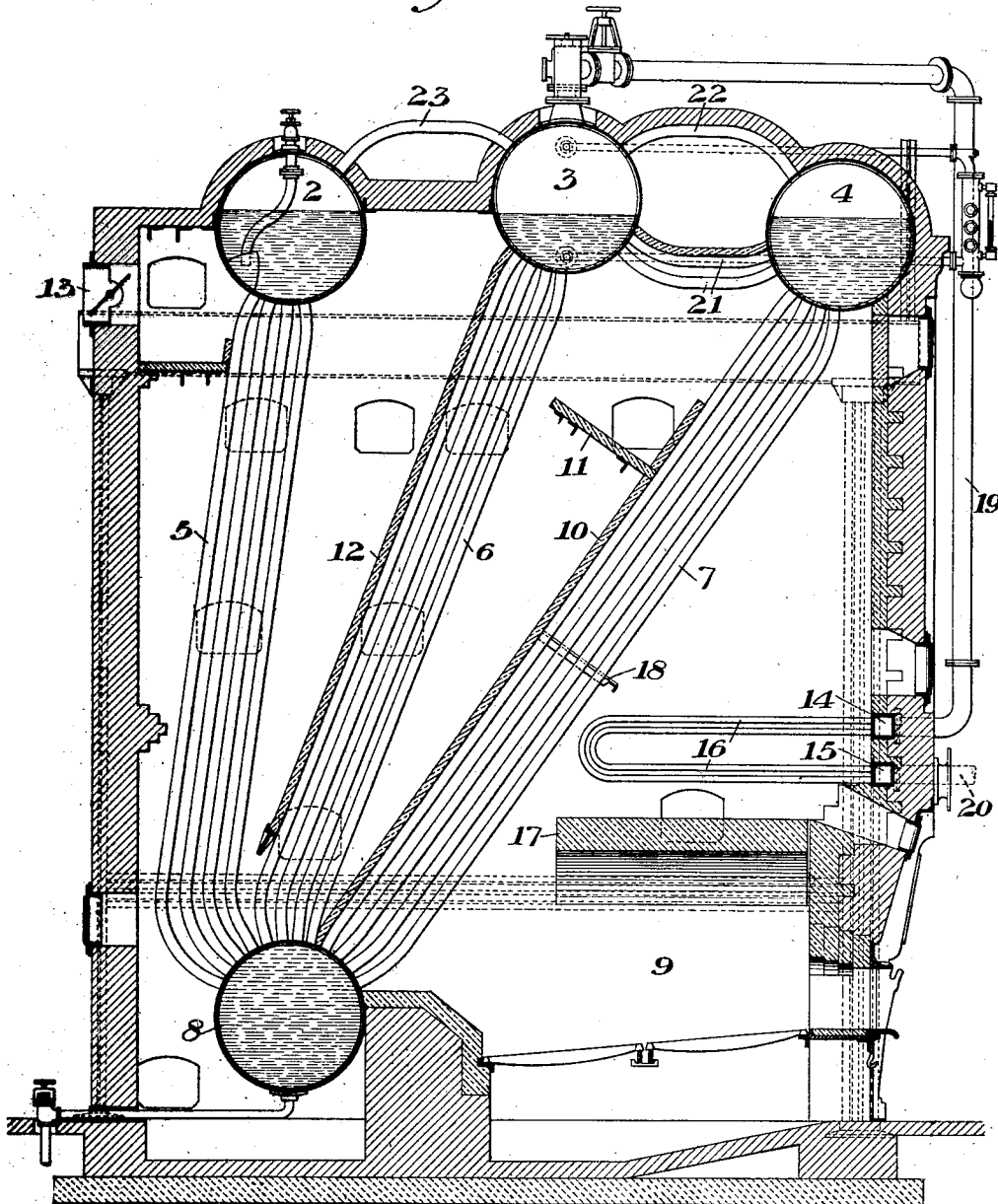
APPLICATION FILED MAY 31, 1906. RENEWED MAR. 27, 1907.

1,045,248.

Patented Nov. 26, 1912.

2 SHEETS-SHEET 1.

Fig. 1.



WITNESSES

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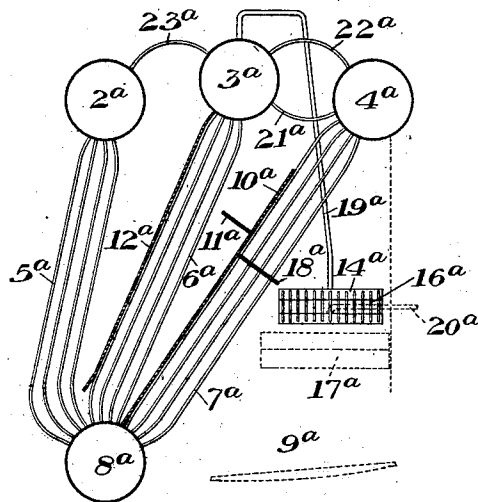
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2 SHEETS-SHEET 2.

Fig. 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN E. BELL, OF NEW YORK, N. Y., ASSIGNOR TO THE BABCOCK & WILCOX COMPANY,
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SUPERHEATER-BOILER.

1,045,248.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN E. BELL, of New York, in the county and State of New York, have invented a new and useful Improvement in Superheater-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 sectional side elevation of a superheater boiler constructed in accordance with my invention; and Fig. 2 is a similar view, showing diagrammatically a modified arrangement of the superheater.

15 My invention relates to the class of superheater boilers, particularly those wherein the furnace is in front of vertically-extending water tubes and is provided with an arch or dome.

20 The object of the invention is to provide for attaining a high degree of superheat while suitably protecting the superheater.

It is also designed to provide a superheater which is located so as to be readily accessible for inspection and repair.

Referring to Fig. 1 in the drawings, 2, 3 and 4 represent upper transverse steam and water drums connected by vertically inclined tubes 5, 6 and 7 to the lower transverse mud drum 8. 9 is a furnace, the gases being directed among the tubes of the front bank by the baffle 10, preferably having a shelf 11, and thence descending among the second bank of tubes, in which they are retained by the baffle 12. The gases then rise through the last bank of tubes and pass to the outlet port 13. The superheater which I have shown as consisting of boxes 14, 15 embedded in the front wall and connected by a transverse series of superheater tubes 16, is located above the furnace arch 17 and comparatively close thereto. If desired, baffle bars 18 may be provided in any desirable number, these bars extending among the tubes of the front bank above the superheater and causing the rising gases to deflect toward the front wall so as to more readily act upon the superheater tubes. By regulating the number and character of these deflectors in the bank of water tubes I can promptly regulate the amount of superheat imparted to the steam. In this form 19 represents a supply-pipe for steam which leads from the middle upper drum, while 20 is the superheater outlet pipe. I have shown

the front upper drums as connected by water tubes 21, and the front and rear water drums as connected to the middle upper drum by steam tubes 22 and 23.

In Fig. 2 I show a form similar to that of Fig. 1, except that the superheater boxes 14^a and 15^a are embedded in the side wall of the boiler setting, the superheater tubes 16^a extending transversely across the boiler setting. In this case parts similar to those of Fig. 1 are marked with similar numerals with the letter "a" applied.

The advantages of my invention result from the high degree of superheat obtained, while the arch protects the superheater from burning out and baffles the gases into the front bank of water tubes. The amount of superheat may be regulated by regulating the baffling which directs the gases into the superheater. The superheater in this position will also receive considerable heat by radiation. This location of the superheater permits easy inspection and repair, and is desirable for this reason.

Instead of extending one set of tubes across the width of the boiler, I may employ boxes in both side walls with two sets of U-shaped tubes extending to the central front part of the boiler; multiple mud drums may be used, the tubes may be exactly vertical or inclined, and many other changes may be made without departing from my invention.

I claim:

1. A water tube boiler having a heated space defined by a wall of the setting, the arch over the combustion chamber and a set of water tubes, and a superheater located in said space and disposed in substantial parallelism with the furnace top; substantially as described.

2. A water tube boiler comprising a setting, a furnace within the setting provided with an arch top, a set of water tubes extending upwardly across the rear open end of the furnace and rising above the same, the front wall of the setting, the furnace top and the set of tubes defining a heated space, a superheater located in said space and in substantial parallelism with the top of the furnace, and a baffle to direct the products of combustion from the furnace upwardly among the water tubes and the superheater tubes; substantially as described.

3. A water tube boiler having a heated space defined by the wall of the setting, the

- top of the combustion chamber and a set of water tubes, a superheater having horizontal tubes located in said space, a baffle to direct products of combustion from the furnace upwardly among the water tubes and to the superheater, and baffle shelves among the tubes disposed to control the amount of products of combustion directed to the superheater.
- 10 4. A water tube boiler having steam and water drums connected by banks of tubes to a transverse mud drum or drums, a furnace at the lower end of the front bank, an arch over said furnace, a plurality of headers in the wall of the boiler setting immediately 15 above the arch, and a plurality of horizontal U-shaped superheater tubes extending from the headers over the top of the furnace arch, and out of the direct path of the gases from the furnace; substantially as described. 20
- In testimony whereof, I have hereunto set my hand.
- JOHN E. BELL.
- Witnesses:
CHARLES B. KNUDSON,
GEORGE H. SONNEBORN.