

No. 725,600.

PATENTED APR. 14, 1903.

J. P. SNEDDON.
WATER TUBE BOILER.
APPLICATION FILED NOV. 1, 1902.

NO MODEL.

Fig. 2.

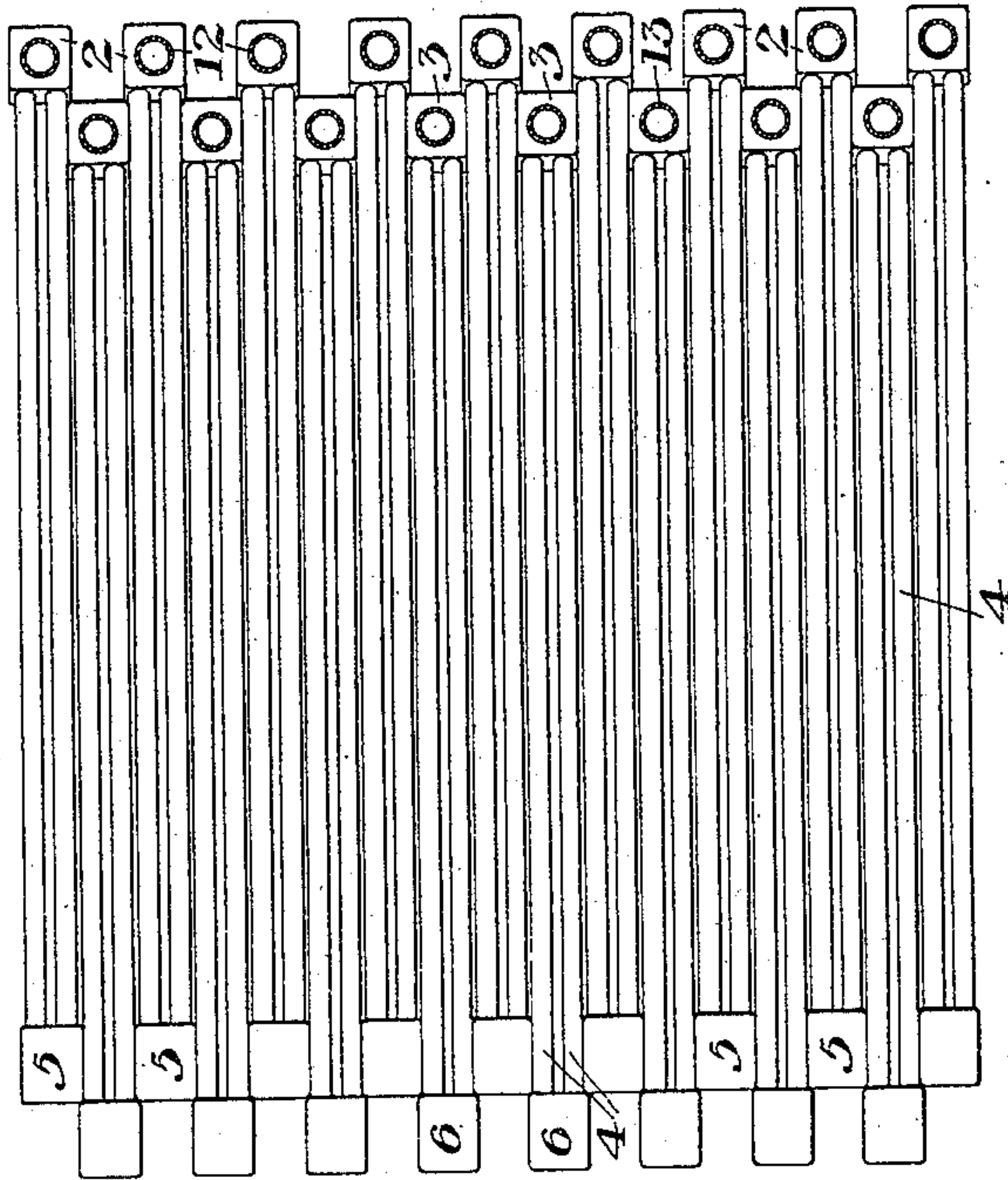
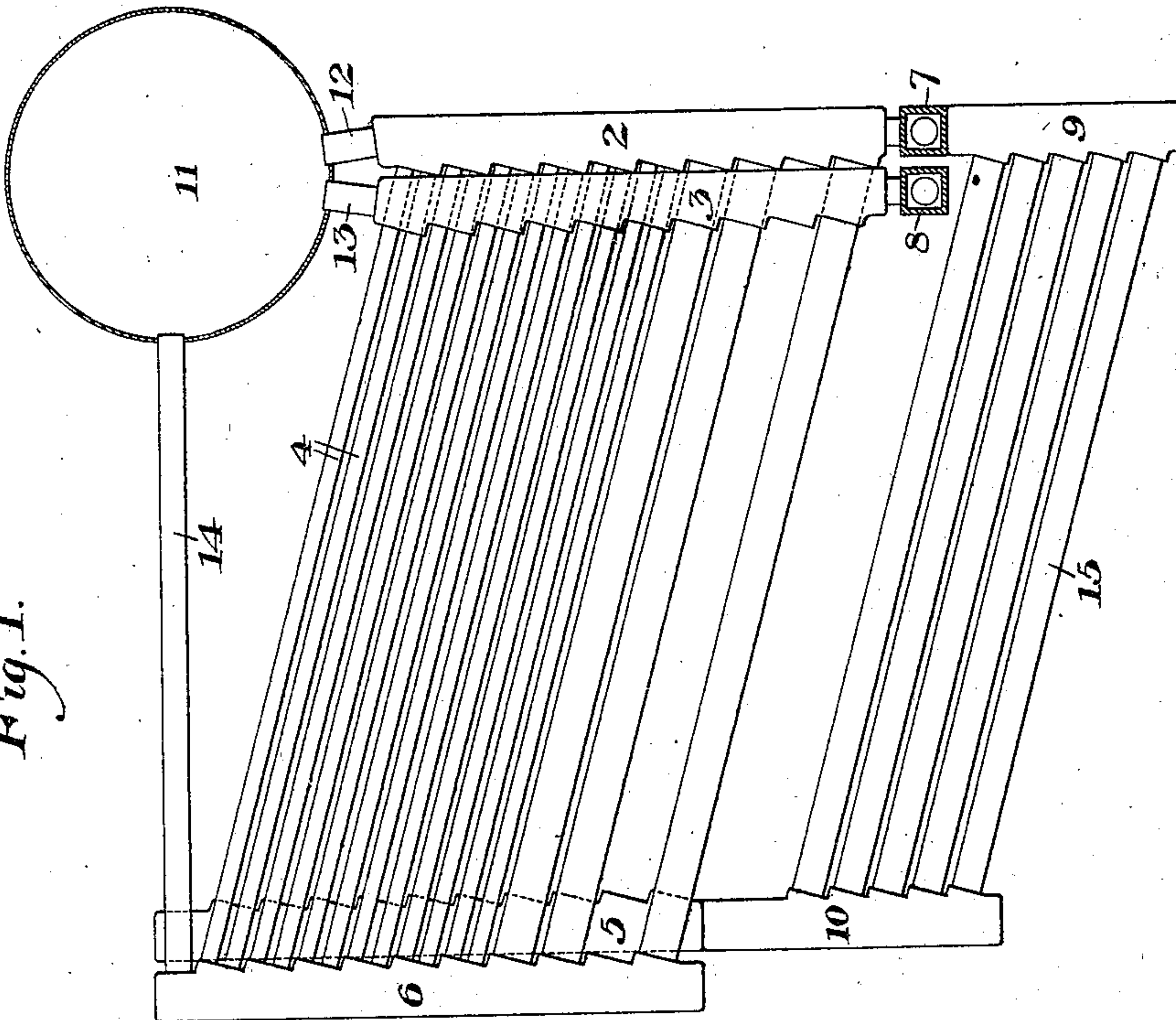


Fig. 1.



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES P. SNEDDON, OF BARBERTON, OHIO, ASSIGNOR TO STIRLING COMPANY,
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WATER-TUBE BOILER.

SPECIFICATION forming part of Letters Patent No. 725,600, dated April 14, 1903.

Application filed November 1, 1902. Serial No. 129,693. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. SNEDDON, of Barberton, Summit county, Ohio, have invented a new and useful Water-Tube Boiler, 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 the boiler structure, and Fig. 2 is a top plan view with the steam-drum and upper tubes broken away to show the header arrangement.

My invention relates to that class of water-tube boilers wherein inclined water-tubes are connected to the front and rear headers, the headers being connected to one or more steam and water drums; and the object of the invention is to bring the tubes entering one header in closer proximity to those of the next, thus decreasing the free area through which the gases rise and the space required for a boiler of given horse-power, while increasing the efficiency of the boiler.

In the drawings, 2 and 3 represent two series of front headers, the headers 2 being in the same vertical plane, while the others are in another plane slightly in the rear thereof. The rear edges of the headers 2 slightly overlap the front edges of the headers 3, the amount of the lap being such that the tubes 4, connected to the inner headers 3, can be withdrawn through the space between the front row 2. The amount of this side lap is preferably substantially equal to the thickness of the metal in the side walls of the headers to provide for the removal of the tubes.

The rear headers 5 and 6 are arranged in two rows in the same manner as the front headers, the tubes of the headers 2 connecting to the headers 5, while those of the headers 3 connect to the rear row 6. The tubes are thus made all of the same length, and the headers are all duplicates of each other, while the tubes are brought closer together than is possible where the headers are all in the same row. In the previous constructions there is a space of at least one-half an inch left between the side walls of the headers, thus bringing the tubes of one header much farther from those of the next than is desirable,

whereas with my construction, using the two rows with a slight overlap, the distance between the centers of the headers is reduced about an inch.

The row 2 of the front headers is shown as nipped to a cross-box or water-lintel 7 at the bottom over the firing-doors, and the row 3 is similarly nipped to a second box or lintel 8. The corner headers of the row 2 are extended downwardly to form water-legs 9, and I preferably similarly extend one or more of the intermediate headers 2 between the firing-doors, as set forth in my copending application, Serial No. 127,505, filed October 16, 1902. The corner headers of the row 5 are also extended down to form supporting water-legs 10.

I have shown a single steam and water drum 11 connected by two sets of tubes 12 and 13 with the front headers and by tubes 14 with the rear headers.

The lower tubes 15 at the sides of the fire-box are preferably made square or rectangular in cross-section between the headers and are shown as of greater diameter than the upper tubes 4, which are arranged in pairs connected to each header.

Owing to the jogged form of the inner faces of the headers, small clearance-spaces are formed between the rear edges of the front row 2 and the front faces of the rear row 3, this being similar with the rear headers; but these clearance-spaces will not affect the action of the boiler.

The advantages of my invention result from the overlapping of the headers, which brings the tubes close together, aids in the distribution of the gases, and increases the efficiency of the boiler.

The form and arrangement of the headers, tubes, drum or drums, and other parts of the boiler, as well as the manner of overlapping the headers, may be varied without departing from my invention.

I claim—

1. A water-tube boiler having vertically-extending front headers arranged in two sets in different planes and overlapping each other, rear headers arranged in two similarly-staggered sets, tubes connecting each set of front headers with the corresponding set of rear headers, both sets of said tubes being in-

clined in the same direction, and an upper steam and water drum connected to both sets of headers at one end of the boiler; substantially as described.

5 2. A water-tube boiler having vertically-extending sinuous front headers arranged in two sets in different vertical planes and overlapping each other, the headers of the two sets terminating at substantially the same
10 levels, sinuous rear headers arranged in two similar staggered sets at a different level, tubes connecting each set of front headers with the corresponding set of rear headers, and an upper steam and water drum at one
15 end of the boiler extending above and connected to both sets of the headers at said end; substantially as described.

3. A water-tube boiler having vertically-extending front headers in two sets in different
20 planes and overlapping each other, the outermost headers having depending corner water-legs, rear headers arranged in two similar staggered sets of which the outermost headers have depending supporting water-legs, tubes
25 connecting each set of the front headers with the corresponding set of rear headers, both sets of said tubes being inclined in the same direction, and an upper steam and water drum connected to both sets of the headers
30 at one end of the boiler; substantially as described.

4. A water-tube boiler having front headers

staggered and arranged in different vertical planes with overlapping side edges, and two lower substantially parallel boxes to which
35 the lower ends of said front headers are connected one of said boxes being located back of the other; substantially as described.

5. A water-tube boiler having front and rear sets of vertically-extending sinuous headers
40 connected by inclined tubes, the alternate headers of each set being staggered, the tubes connecting the headers being of substantially the same length and all inclined in the same direction, and an upper steam and water
45 drum connected to the headers; substantially as described.

6. A water-tube boiler having front and rear headers connected by inclined tubes, an upper steam and water drum connected to the
50 front headers by vertical tubes or nipples, and to the rear headers by horizontally-extending tubes, the headers of each set being arranged in two rows with overlapping edges, and water boxes or lintels connected to the
55 lower ends of the front headers; substantially as described.

In testimony whereof I have hereunto set my hand.

JAS. P. SNEDDON.

Witnesses:

E. F. BAKER,
O. D. EVERHARD.