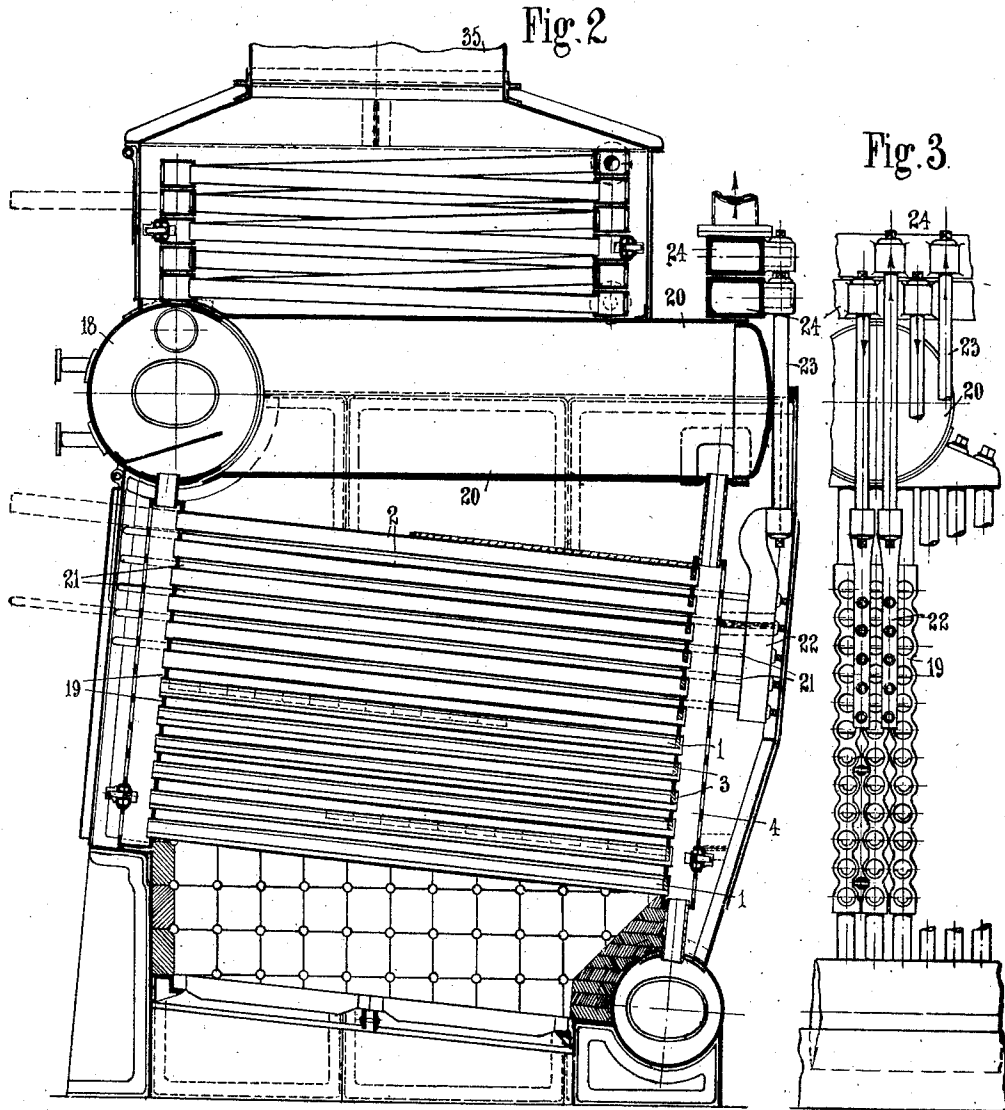


J. P. DAVIES.
WATER TUBE BOILER.
APPLICATION FILED APR. 2, 1909.

1,058,733.

Patented Apr. 15, 1913.

2 SHEETS—SHEET 2.



Witnesses
H. E. Barkley
E. J. Gibbs

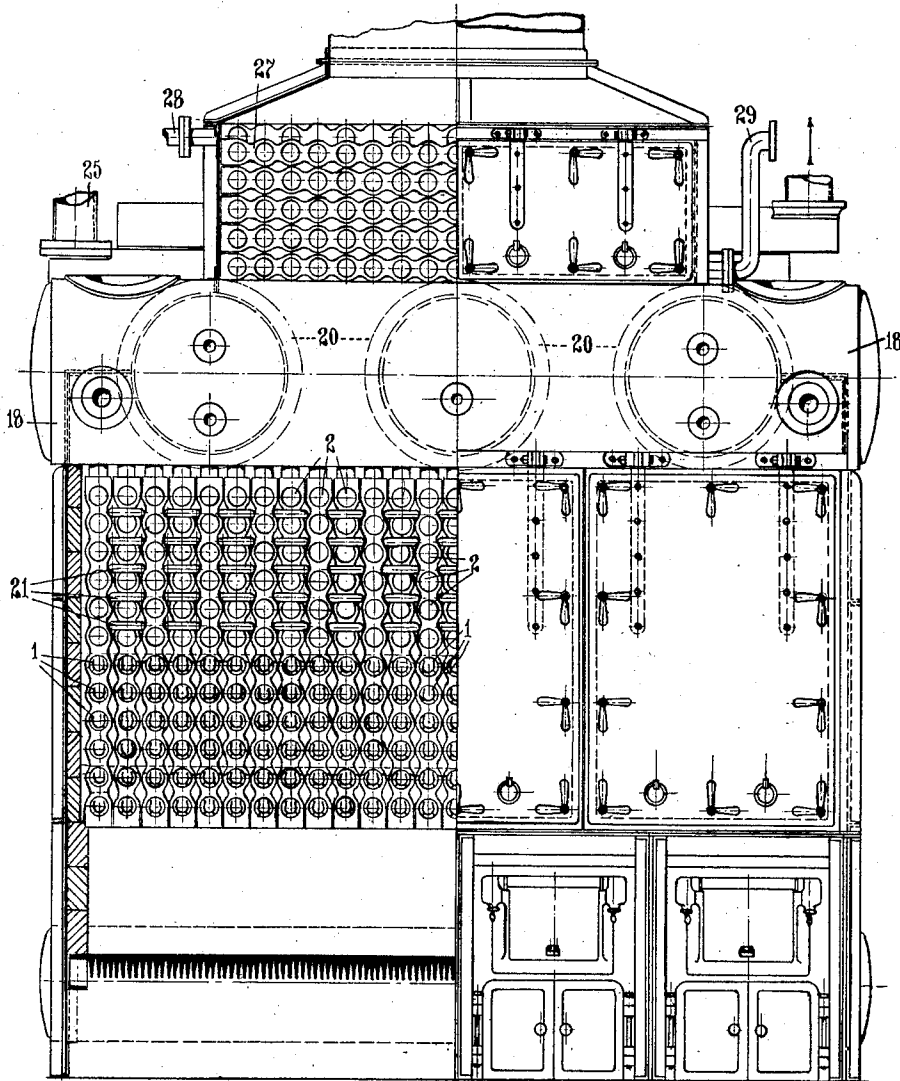
Inventor
John Prothero Davies
per. *James Appleman*
Attorney.

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Fig. 1



Witnesses:
L. C. Barkley
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UNITED STATES PATENT OFFICE.

JOHN PROTHERO DAVIES, OF PUTNEY, LONDON, ENGLAND.

WATER-TUBE BOILER.

1,058,733.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed April 2, 1909. Serial No. 487,602.

To all whom it may concern:

Be it known that I, JOHN PROTHERO DAVIES, a subject of the King of Great Britain, residing at 19 Fawe Park road, Putney, in the county of London, England, engineer, have invented new and useful Improvements in Water-Tube Boilers, of which the following is a specification.

My invention relates to that type of water tube boiler in which horizontal or inclined tubes lead into vertical headers with the furnace arranged below said tubes and steam and water drums above said tubes.

My invention comprises an improved superheater for this type of boiler in which looped superheater tubes are passed through the spaces formed between the headers, said superheater tubes being carried through the tube chamber and between the back headers into special superheater headers or steam boxes connected with steam drums or directly into said steam drums.

The present invention is designed to provide an arrangement of superheater tubes which are capable of being withdrawn from the boiler without it being necessary to break the other boiler joints or to disturb in any manner the other parts of the boiler.

My invention is more particularly described with reference to the accompanying drawings in which—

Figure 1 shows a front elevation of a water tube boiler. Fig. 2 shows a sectional elevation on the line A—B of Fig. 1. Fig. 3 shows a detail view of the method of arranging the superheater.

Referring now to the drawings, I show more particularly in Figs. 1 and 2 a boiler with headers of the class provided with corrugated and waved sides such as have been suggested hitherto for the purpose of facilitating the cleaning of the external parts of the water tubes. It must be understood, however, that my invention is not limited to the use of such headers.

According to the present invention, the spaces formed between the corrugated sides of the headers are used as shown in Fig. 1 for inserting looped or other shaped superheater tubes 21 from the front end of the boiler, said superheater tubes being carried

through the tube chamber and between the back headers into the special superheater headers 22 (see Figs. 2 and 3) arranged at the back of the boiler behind the rear headers 4. The said superheater headers are connected by means of tubes 23 with the steam boxes 24. The steam generated by the boiler passes from the drums through the outlet 25, shown broken away, into one or other of the said steam boxes 24 from which it passes down through the tubes 23 to one of a pair of the superheater headers 22 and then travels through the superheater tubes 21 which pass through the hot gases in the tube chamber to the front or smoke box end of the boiler and around the front headers back through the tube chamber to the other one of the pair of superheater headers at the rear of the boiler from whence it passes into the other steam box and is led away through the outlet 26 to the engine or elsewhere.

The arrangement of the super-heater tubes between the vertical series of generating tubes and projecting through the spaces between the front headers allows of the super-heater tube being placed in either the hottest or coolest part of the gases to create any required temperature of steam. Further one or more of said tubes can be withdrawn into the stoke hole and replaced by simply opening the smoke box doors and driving the tubes out of the superheater headers.

What I claim is:

1. In a water tube boiler, the combination of a series of upcast and downcast vertical headers, generating tubes connecting said headers, steam and water drums arranged above said tubes connected with said headers, a series of horizontally looped superheater tubes passed between the sides and looped around the front ends of said upcast headers, steam drums and means for connecting said superheater tubes with said steam drums and a furnace arranged below said tubes.

2. In a water tube boiler, the combination of a series of upcast and downcast vertical headers with waved sides, generating tubes connecting said headers, steam and water drums arranged above said tubes connected

with said headers, a series of horizontally looped superheater tubes passed between the waved sides and looped around the front ends of said upcast headers, steam drums, 5 superheater headers for connecting said superheater tubes with said steam drums and a furnace arranged below said tubes.

In testimony whereof I have signed my name to this specification in the presence of the two subscribing witnesses.

JOHN PROTHERO DAVIES.

Witnesses:

LEONARD S. HAYNES,
H. D. JAMESON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
