

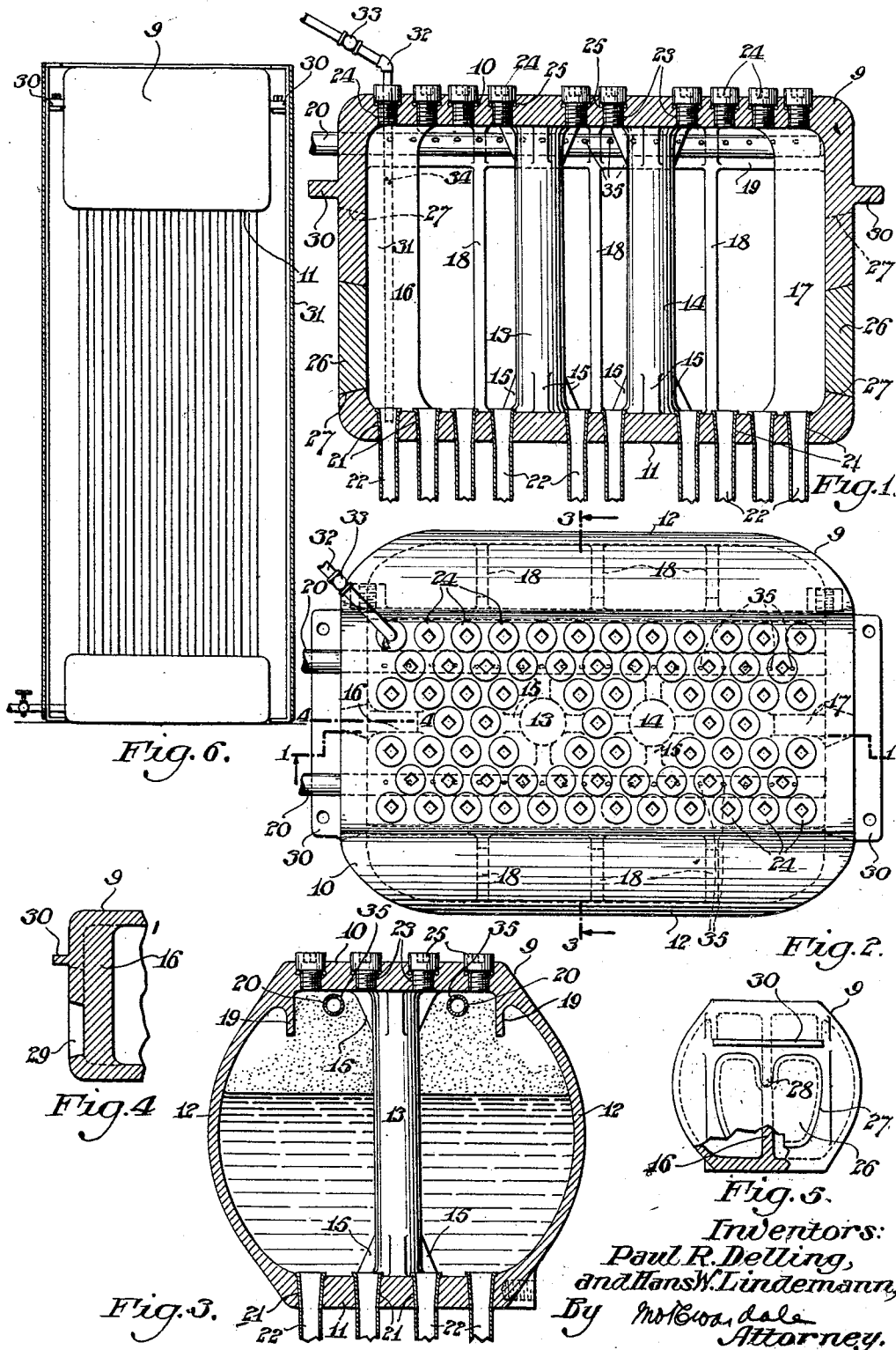
Jan. 20, 1931.

P. R. DELLING ET AL

1,789,427

BOILER HEADER

Filed Aug. 7, 1926



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# UNITED STATES PATENT OFFICE

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## BOILER HEADER

Application filed August 7, 1926. Serial No. 127,894.

The invention relates to improvements in boiler headers, especially top headers, and comprises a single integral casting, instead of two drop forgings welded together, as has hitherto been the practice in such construction. By constructing the header of a single integral casting, it is possible to provide deep reinforcing ribs or webs and integral stays having reinforcing ribs or webs at the juncture between the ends of the stays and the top and bottom walls of the header. By these reinforcing elements it is possible to depart from the semi-circular formation of the header side walls, heretofore deemed necessary to resist the strains incident thereto, and thus flatten said side walls in order to make the header higher without the necessity of broadening the body of the header. Stays are also provided within the header body to afford means for anchoring the end cover plates in position. Suitable splashers baffles or ribs are also provided to direct the splash downwardly away from the dry steam pipes which are located near the underside of the upper wall of the header chamber. All these reinforcing and baffle elements are cast integral preferably within the header body, leaving the outer surface substantially smooth and unbroken.

Referring to the drawings, which illustrate merely by way of example, suitable means for effecting the invention;

Fig. 1 is a longitudinal vertical section on line 1, 1 of Fig. 2.

Fig. 2 is a top plan view.

Fig. 3 is a vertical cross-section on line 3, 3 of Fig. 2.

Fig. 4 is a vertical section on line 4, 4 of Fig. 2, on a reduced scale and with the end plate removed.

Fig. 5 is an end elevation, partly in broken section and on a reduced scale.

Fig. 6 is an elevation, on a reduced scale, of the assembled boiler, the outer casing being in section.

Similar numerals refer to similar parts throughout the several views.

The top header, as shown in the drawings, comprises the integral steel casting 9, having the flat top wall 10, the flat bottom wall

11, and the curved side walls 12. The said top and bottom walls are connected by the integrally cast stays 13 and 14, having radiating reinforcing ribs 15 at their juncture with said top and bottom walls. The rectangular stays 16 and 17, provided at the ends of the header are cast integral with the said top and bottom walls, and also with a part of the end walls of the header. The curved side walls 12 are provided with the reinforcing ribs or webs 18 cast integral therewith. Integrally cast splashers baffles or webs 19 project downwardly from the top wall 10, to direct the water that tends to surge upwardly against the curved sides 12, downwardly away from the dry steam pipes 20, which extend horizontally close to the under side of the top wall 10. The bottom wall 11 is provided with the tapered openings 21, into which the ends of the water tubes 22 are expanded as shown. The top wall 10 is provided with the registering openings 23 for the expanding tool; these openings being normally closed by the threaded plugs 24, cooperating with the gaskets 25.

The end cover plates 26 are provided to close the end openings 27 in the header, and are anchored to the rectangular stays 16 and 17.

It will be noted that parts of the plates 26 are recessed, as at 28, Fig. 5, and the stays 16 and 17 extend in part to the outer surface of the header wall into the recess 28, and are partly recessed as at 29 to receive a part of the plate 26, so that an interlocking engagement is formed between the plates and stays. The adjacent margins of the plates 26 and surrounding walls of the header are welded together.

The header body or casting 9 is also provided with the outwardly extending flanges 30 for connection to the surrounding casing 31.

The header 9 is also provided with the water inlet pipe 32. This water inlet pipe 32 is shown passing through one of the plugs 24, and extending downwardly to deliver into one of the tubes 22 most remote from the grate. This inlet or feed water pipe 32 is provided with the usual check valve 33 and

is provided near the top of the header chamber with one or more minute holes 34. In case the check valve 33 should leak, these holes 34 will admit a small quantity of steam to pipe 32, which will practically prevent the discharge of water from the boiler when pressure in feed-water pipe is reduced below boiler pressure.

It should also be noted that the dry steam pipes 20 are provided with a series of small steam apertures 35; these apertures or perforations extend along the greater part of the length of said pipes 20, which deliver the dry steam to the engine.

What we claim is:—

1. A header for tubular steam generators, comprising a cast metal chambered body having a flat bottom wall provided with tapered openings for the water tubes, and a top wall provided with threaded registering openings for receiving the expanding tool, threaded plugs for closing said registering openings after the expanding operation, and reinforcing stays having radiating web formations at their ends cast integral with said stays and top and bottom walls.

2. A header for tubular steam generators, comprising a cast metal chambered body having outwardly convex side walls, a steam discharge pipe positioned within the chambered body closely adjacent the top wall thereof and a curtain like baffle cast integral with the chambered body adjacent the junction of the top and side walls and between the side wall and the said pipe.

3. A steam boiler header comprising a cast metal chambered body having outwardly convex side walls and splash baffles positioned at the junction of the top with the side walls and cast integral therewith.

4. A header for steam generators, comprising a cast metal chambered body having substantially flat top and bottom walls and outwardly convex side walls, parallel webs projecting inwardly from the side walls and integral therewith and with substantial portions of the top and bottom walls, and stays connecting the middle portions of the top and bottom walls having radiating webs at each end integral with said top and bottom walls.

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