July 29, 1930. W. H. CLIFF 1,771,874

CONNECTION FOR BOILER SECTIONS

Filed Dec. 19, 1928

Fig. 1.

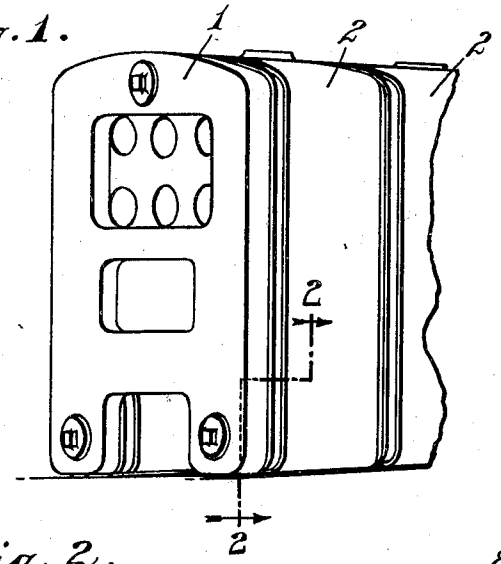


Fig. 2.

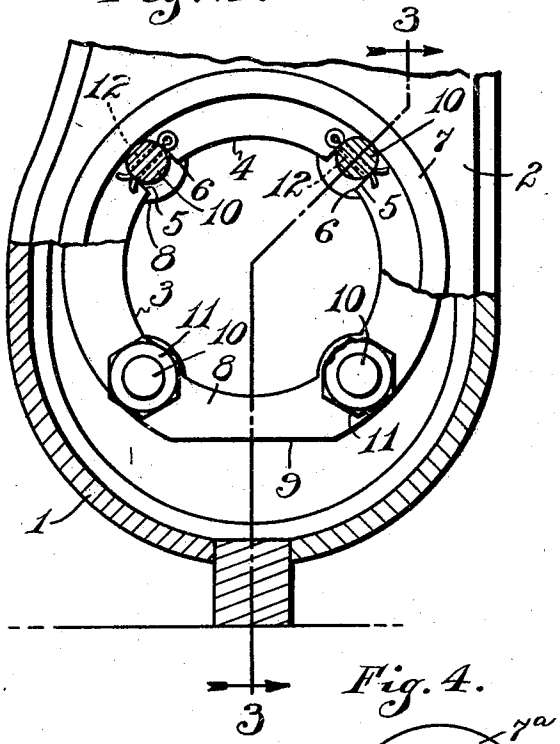


Fig. 3.

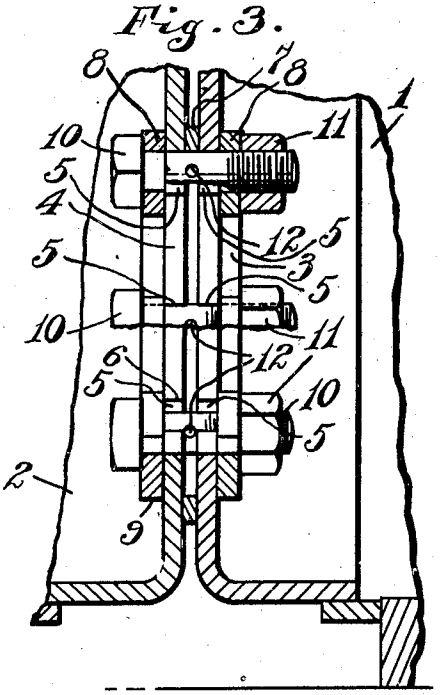
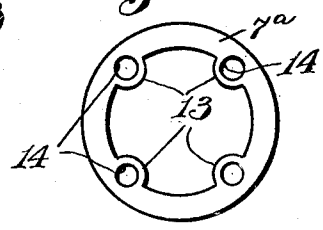


Fig. 4.



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Patented July 29, 1930 1,771,874

UNITED STATES PATENT OFFICE

WILLIAM H. CLIFF, OF TERRE HAUTE, INDIANA, ASSIGNOR TO TERRE HAUTE BOILER WORKS COMPANY, OF TERRE HAUTE, INDIANA, A CORPORATION OF INDIANA

CONNECTION FOR BOILER SECTIONS

Application filed December 19, 1928. Serial No. 326,997.

My invention relates to improvements in means for connecting the sections of sectional boilers. In this type of boiler, each section is usually provided with a communicating opening in the steam dome and with similar openings in its water legs. The sections are so positioned that these openings are adjacent one another and connecting nipples are usually provided, connecting these openings. In the type of boiler shown in my co-pending application, filed October 31, 1928, Serial Number 11,543, it is somewhat difficult to provide threaded nipples for connecting the sections together, due to the fact that in this particular type of boiler, the sections are formed of sheet steel and as the result these walls are comparatively thin, so that from a commercial standpoint at least it is impossible to provide screw threads for the reception of the nipples in the walls of the openings. My invention particularly designed for use in connection with the above type sectional boilers and is designed to provide means whereby the sections of the boiler may be readily and easily assembled and connected. For the purpose of disclosing my invention, I have illustrated one embodiment thereof in the accompanying drawings, in which:

Fig. 1 is a perspective view of a boiler embodying my invention.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a view of a modified gasket which may be used.

In the embodiment of the invention, the boiler comprises a front section 1, intermediate sections 2—2 and a rear section (not shown). These sections are provided with circulation openings both at the top and the bottom. In Figs. 2 and 3 I have merely illustrated the circulation opening in one of the bottom legs, the other openings being of the same general structure. Each of the adjacent openings 3 and 4 is preferably circular in form and the end section is also provided with bolt receiving openings 5, which merge at 6 into the circulation opening. There are preferably four of these bolt openings, 5 arranged as indicated. Between the adjacent sections and surrounding the openings are placed suitable gaskets 7 and the sections are clamped together by means of clamping washers 8—8 bearing against the inner face of the sections. These washers have flattened portions 9 at diametrically opposite points thereof so that, in assembling, the washers may be inserted through the circulation openings from the exterior of the section, the bolt receiving openings merging with the circulation openings and the flat portions of the washers permitting such insertion. The washers are adapted to be drawn up by suitable bolts 10 having heads on one end and adapted to receive threaded nuts 11 on the opposite end.

In assembling the sections and connecting the same together, a washer is slipped through the opening and the bolts 10 inserted in the bolt receiving openings in the washer and projected through the openings 5. The gasket 7 is then hung on the bolts and the next adjacent section moved up, so that the bolts project through its bolt openings. A second washer may now be placed in position, being inserted through the opposite opening in the section and slipped on the bolts, after which the nuts 11 may be screwed up drawing the sections tight together. In order to prevent the bolts from slipping out of position after they have been initially inserted through the first washer and caused to project beyond the section, the bolts are provided with pin openings 12 adapted to receive cotter pins after the first washer and the bolts have been placed in position. The cotter pins prevent the bolts from slipping back during the assembly of the next adja-

cent section and the placing in position of the next washer.

I have found that the use of the cotter pins for maintaining the bolts in position is advantageous though it is not always essential. In some instances these pins may be dispensed with and in such instances I prefer to use the form of gasket illustrated in Fig. 4, wherein the gasket 7ª is provided with inward extensions 13 through which bolt receiving openings 14 extend. In assembling the sections and in using this type of gasket a washer is inserted through the circulation opening of the erected section in the manner heretofore described and the bolts slipped through. After the bolts and washers have been positioned a gasket of the type illustrated in Fig. 4 is mounted on the bolts on the exterior of the erected section. The next section is then placed in position adjacent to the erected section and, working through the circulation openings of this section, the second washer and securing nuts are placed in position. I have found that frequently friction exerted by the walls in the openings of the gasket prevents the bolts from slipping out of position during the positioning of the next succeeding section and the securing of the nuts in position.

I claim as my invention:

1. A sectional boiler comprising a plurality of sections, each section having a circulation opening therein, the openings of the adjacent sections being adapted to coincide, means for connecting said sections together, comprising clamping washers, arranged on the opposite faces of said sections and surrounding said openings, clamping bolts extending through said washers and sections, and a gasket between said sections and surrounding said openings.

2. A sectional boiler comprising a plurality of sections, each section having a circulation opening therein and bolt openings surrounding the same and intersecting said circulation openings, and means for connecting said sections together, comprising clamping washers, arranged on the opposite faces of said section, clamping bolts extending through said washers and through said bolt openings in said sections, and a gasket between said sections and surrounding said circulation openings.

3. A sectional boiler comprising a plurality of sections, each section having a circulation opening therein and bolt openings therethrough intersecting said circulation openings, the openings of the adjacent section coinciding, means for connecting said sections together comprising clamping washers arranged on the opposite faces of said sections, said washers having flattened edges at diametrically opposite points, clamping bolts extending through said washers and said bolt openings in the sections, and a gasket between said sections and surrounding said circulation openings.

4. A sectional boiler comprising a plurality of sections, each section having a circulation opening therein, the openings of the adjacent sections being adapted to coincide and means for connecting said sections together, comprising clamping washers arranged on the opposite faces of said sections, clamping bolts extending through said washers having pin receiving eyes intermediate of their ends, and a gasket between said sections surrounding said openings.

5. A sectional boiler comprising a plurality of sections, each section having a circulation opening therein, and bolt openings surrounding said circulation openings and intersecting the same, the openings of the adjacent sections being adapted to coincide and means for connecting said sections together, comprising clamping washers, having their edges flattened at diametrically opposite points, arranged on the opposite face of said sections, clamping bolts extending through said washers, securing pins passing through said bolt openings intermediate of their ends, and a gasket between said sections and surrounding said circulation openings.

6. A sectional boiler comprising a plurality of sections each having a circulation opening therein and having bolt openings surrounding said openings and intersecting the same, a clamping washer having its edges flattened at diametrically opposite points, bolts passing through said washers and bolt openings for clamping said washers and sections together, and pins transversely passing through said bolts to maintain the same in assembled position.

7. A sectional steel boiler comprising a plurality of sections each having a circulation opening therein and having bolt openings surrounding said circulation openings and intersecting the same, a clamping washer having its edges flattened at diametrically opposite points to permit the passage of said washer through said circulation openings and bolts extending through the washers of adjacent sections for clamping said washers and sections together.

8. A sectional steel boiler having circulation openings therein and having bolt openings surrounding said circulation openings and intersecting the same, a clamping washer having its edges flattened at diametrically opposite points to permit the same to pass through said circulation openings, a gasket interposed between the sections of the boilers and having bolt receiving openings therein and clamping bolts passed through the washers of the adjacent sections and through the bolt openings of the gasket to clamp said parts together.

9. A sectional boiler comprising a plural-

ity of sections each having a circulation opening therein and having bolt openings surrounding said circulation openings and intersecting the same, clamping washers arranged on the opposite faces of said sections and surrounding said circulation openings and clamping bolts extending through said washers and through said bolt openings for clamping the parts together.

In witness whereof, I, WILLIAM H. CLIFF, have hereunto set my hand at Terre Haute, Indiana, this 30th day of November, A. D. one thousand nine hundred and twenty-eight.

WILLIAM H. CLIFF.