J. E. WHITTLESEY.

BOILER.

APPLICATION FILED SEPT. 13, 1915.

1,281,458.

Patented Oct. 15, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

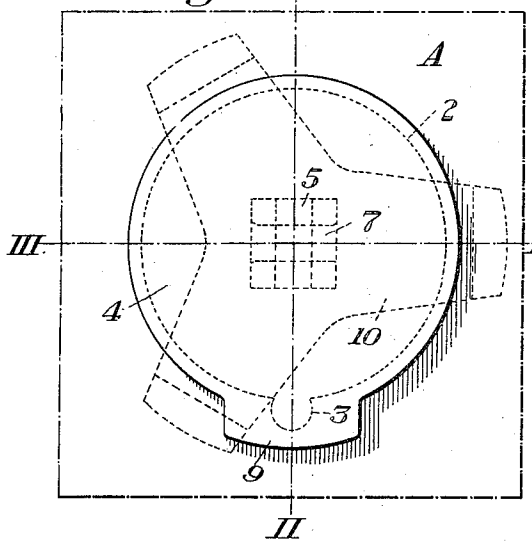


Fig. 2.

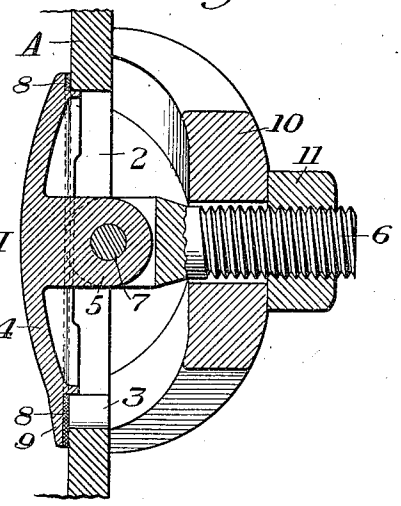


Fig. 3.

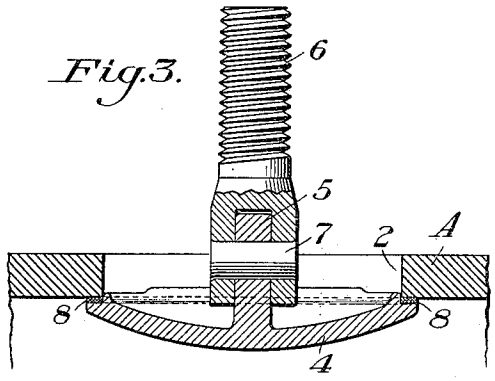


Fig. 4.

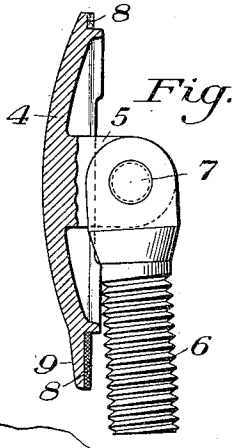
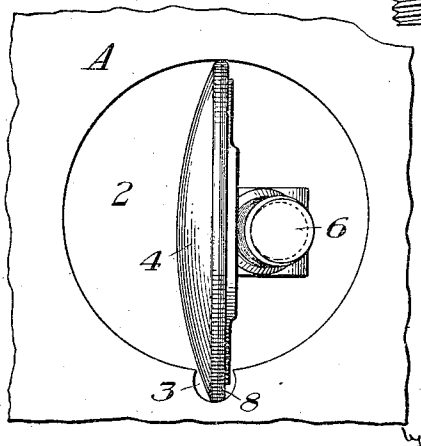


Fig. 5.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 6.

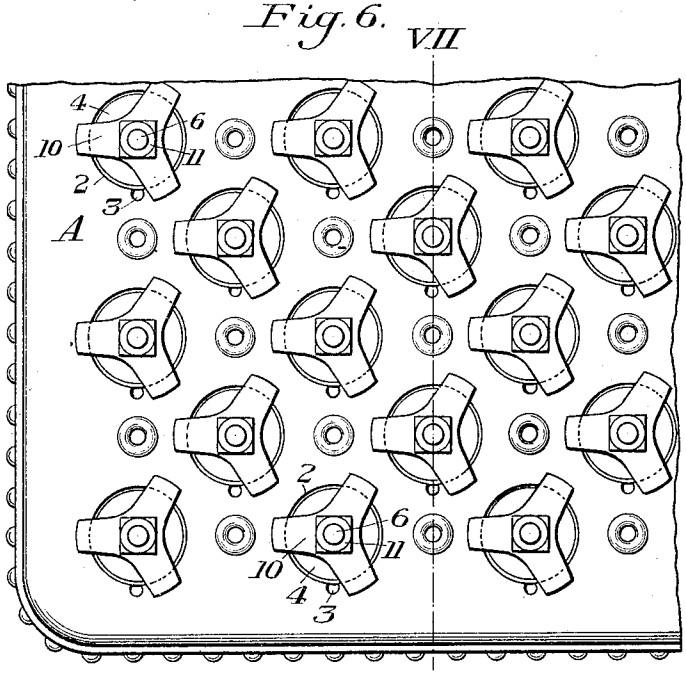
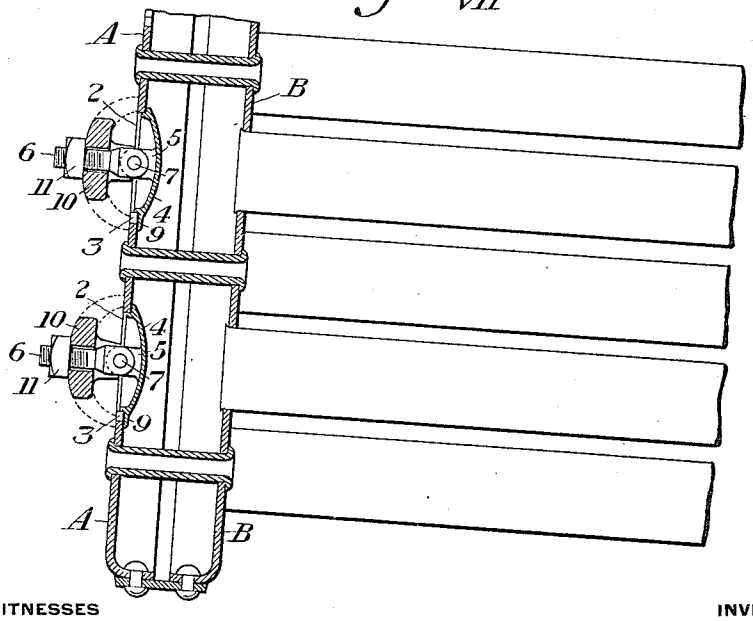


Fig. 7.



WITNESSES

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BOILER.

1,281,458. Specification of Letters Patent. Patented Oct. 15, 1918.

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To all whom it may concern:

Be it known that I, JOHN E. WHITTLESEY, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in 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 side view of a portion of a boiler plate showing one form of my improved hand-hole cover applied;

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

Fig. 3 is a similar view on the line III—III of Fig. 1;

Fig. 4 is a sectional view through the cover showing the bolt swung in a lateral direction;

Fig. 5 is a face view of a portion of a boiler plate illustrating the method of inserting the hand-hole cover through the opening in the boiler sheet;

Fig. 6 is a front view of a portion of a boiler structure showing a plurality of hand-hole covers in position; and

Fig. 7 is a detail sectional view on the line VII—VII of Fig. 6.

This invention relates to an improvement in boilers, and more particularly to the arrangement of the hand-holes in one of the boiler sheets and the covers therefor.

The object of the invention is to provide a hand-hole cover of cylindrical form arranged to pass through a circular opening in the boiler sheet, which opening is provided with a recess extending in a lateral direction therefrom. Further, to provide a hand-hole cover having a bolt pivotally connected thereto, so that the bolt can be swung in a lateral direction and will lie against the inner face of the hand-hole cover; and the hand-hole cover and its attached bolt can be inserted through an opening of minimum size.

It is well known to those familiar with the art that where oval openings are used, the boiler sheet is materially weakened on a line coincident with the major axis of the opening. The openings illustrated and described in my present application can be placed an equal distance from each other in both vertical and horizontal directions, so that the stay bolts retaining the two sheets of the water leg are placed an equal distance from each other and the stresses and strains to which the sheets are subjected will be equal about the structure, and will not materially weaken the boiler sheet in any direction.

The precise nature of my invention will be best understood by reference to the accompanying drawings, which will now be described, it being premised, however, that various changes may be made in the details of construction and arrangement of the parts, without departing from the spirit and scope of my invention as defined in the appended claims.

Referring to the accompanying drawings, the reference character A designates the outer boiler sheet having a plurality of hand-holes 2, therethrough; and B designates the inner sheet, to which the water-circulating tubes are connected. Each of the openings 2 is of annular form, as illustrated in Fig. 1, and is provided with a recess 3, the arrangement being such that the diameter from the bottom of the recess to the edge of the opening 2, opposite the recess, is slightly greater than the major portion of the diameter of the hand-hole cover. 4 designates the hand-hole cover which is provided on its inner face with a projection 5, for the reception of the forked end of a retaining bolt 6, and 7 is a rivet or pin for connecting the bolt 6 to the member 5. 8 is a gasket of any approved construction and is placed on an annular seating face on the hand-hole cover. The hand-hole cover 4, as well as the gasket 8, is provided with a projection, such as shown at 9 in Fig. 1, for covering the recess 3 when the hand-hole cover is in position.

The numeral 10 designates yokes, which are provided with the usual through orifices for the reception of the bolts on the hand-hole covers, and 11 are nuts for securing the hand-hole covers in position. The bolts are swung back into the position shown in Figs. 4 and 5, and the hand-hole cover is then passed through the opening 2, as illustrated in Fig. 5, and swinging on the pin 7 is moved into the position shown in Fig. 3. The yoke 10 is then placed in position and the cover secured by means of the nut 11, as illustrated in Fig. 2.

By the use of an arrangement of this character, I am enabled to form annular openings in the boiler sheet which can be more readily made than openings of any other character, while the recesses 3 can

readily be formed by drilling or in any other desired manner.

The advantages of my invention result from the arrangement of the hand-hole openings, together with the recesses extending into said openings, which recesses are so arranged that an annular hand-hole cover can readily be inserted through the opening. Further, from the provision of an annular cover having a projection extending in a radial direction from the periphery thereof to cover the recess, and also from the provision of a cover having a bolt member pivotally connected thereto, so that the bolt can be swung at an angle to its final position to more readily permit the bolt and hand-hole cover to be inserted through the opening in the boiler sheet.

I claim:

1. A boiler sheet having a hand hole of cylindrical form therein, there being a recess communicating with said opening, an annular hand hole cover for said opening, said hand hole cover having a gasket seating flange, said flange having a projecting portion for closing the recess, an annular gasket centering portion, said centering portion also being arranged to center the cover in the opening, and means for securing said hand hole cover in position on the sheet; substantially as described.

2. A hand hole cover of cylindrical form having a projection extending in a radial direction from the edge thereof, the inner edge of said cover being arranged to form a seat for a gasket, an annular gasket centering flange on the inner face thereof, and a connecting bolt hinged to the cover and adapted to swing in a plane coincident with the projection; substantially as described.

3. A structure of the type described, comprising a boiler sheet having a hand-hole of cylindrical form therein, there being a recess communicating with said opening, an annular hand-hole cover for said opening, said hand-hole cover having a gasket seating flange, said flange having a projecting portion for closing the recess, an annular gasket centering portion surrounding the gasket seating flange, said centering portion also being arranged to center the cover in the opening in the boiler sheet, a connecting bolt hinged to the cover and adapted to swing in a plane co-incident with the projection, the arrangement being such that when the bolt is swung at right angles to its normal position the cover can readily be inserted through the opening and the recess, and then turned to its proper position to bring the projection on the cover over the recess, a three-armed yoke having an opening therethrough for the reception of the bolt, the arms being arranged to engage the outer surface of the boiler sheet surrounding the opening, and a nut engaging the bolt and yoke for drawing the hand-hole cover in position to cover the opening, substantially as described.

In testimony whereof, I have hereunto set my hand.

JOHN E. WHITTLESEY.

Witnesses:
GEO. B. BLEMING,
JESSE B. HELLER.

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