(No Model.)

W. H. CAHALL.

MANHOLE CLOSURE FOR STEAM BOILERS.

No. 537,749. Patented Apr. 16, 1895.

Fig. 1.

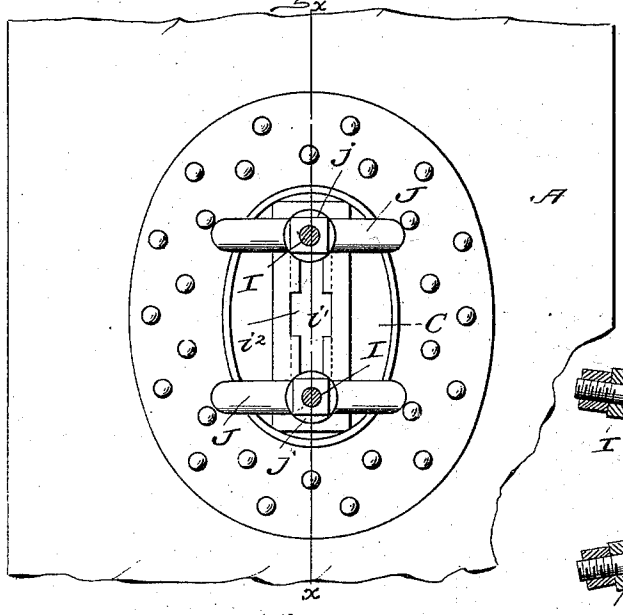


Fig. 2.

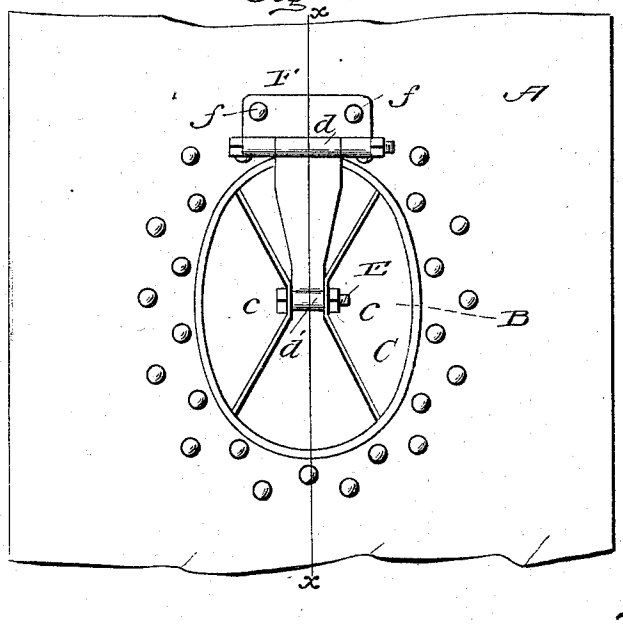


Fig. 3.

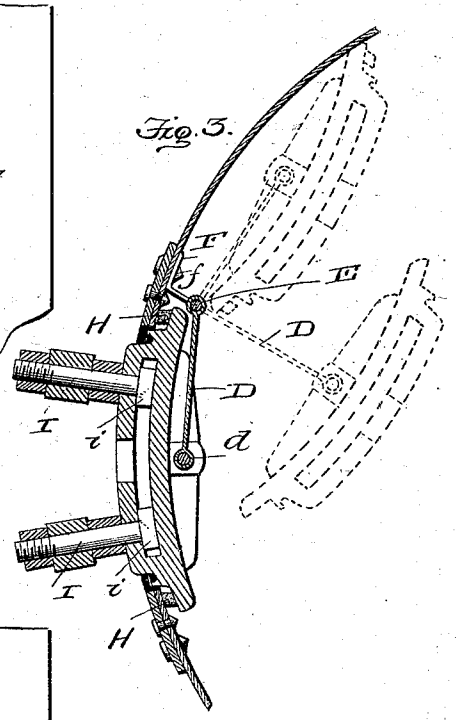


Fig. 4.

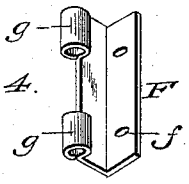
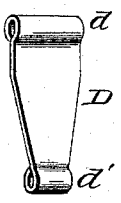


Fig. 5.



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UNITED STATES PATENT OFFICE.

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MANHOLE-CLOSURE FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 537,749, dated April 16, 1895.

Application filed August 21, 1894. Serial No. 520,908. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. CAHALL, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Manhole-Closures for Steam-Boilers and other Metallic Tanks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is a manhole closure for steam boilers or other metallic vessels in which the cover is placed and supported on the inside of the steam boiler or tank, and the object that I have in view is to provide a construction by which the closure can be adjusted or swung to one side of the hole in the vessel or tank without requiring the operator to lift or carry the cover, and to enable the cover to be brought exactly to its seat against the vessel so as to make the gasket produce a tight joint between the vessel and cover.

With these and such other ends in view as pertain to my invention, it consists in the combination with a steam boiler or a metallic tank, having an opening therein, of a cover or head arranged within the vessel or tank, and means for supporting the cover or head in place when it is moved to one side of the opening to expose the latter.

The invention further consists in the combination with a steam boiler or a metallic tank, of a swinging bracket or arm pivoted to the inside of the tank at one side of the opening therein, and a cover or head pivotally supported on the free end of the bracket or arm, whereby the cover or head is adapted to turn on the pivots which support it on the bracket when the parts are moved to expose the hole or opening and thus the cover is adapted to fold at right angles to the bracket to enable the cover to be adjusted in a small space inside of the vessel or tank, and whereby the cover or head is adapted to fit exactly to the seat on the tank or vessel to produce with the gasket a tight joint between the vessel and its cover or head; and the invention further consists in the construction and organization of parts which will be hereinafter fully described and claimed.

To enable others skilled in the art to which this invention relates to understand the same, I have illustrated one embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is an elevation looking at the outside of a steam boiler or tank, showing the means for holding the head or cover when it is closed against the tank. Fig. 2 is an elevation looking at the inside of a steam boiler or tank, showing the cover in its closed position. Fig. 3 is a transverse sectional view on the plane indicated by the dotted lines *x*—*x* of Figs. 1 and 2, showing the cover in its closed position by full lines, and, by dotted lines, illustrating the positions of the cover when it is swung to one side of the hole or opening in the tank, to expose the same. Figs. 4 and 5 are detail views of the bracket, and the angle plate, respectively, by which the bracket is supported on the tank.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A denotes the shell of a steam boiler or other metallic tank, and B is the hole or opening therein. This steam boiler, tank or vessel may be of cylindrical form, or of any other preferred shape, and it is of such construction and size as to adapt it for any uses to which steam boilers, tanks or vessels are put in various arts.

In large metallic vessels, the head or cover which closes the hole or opening therein is not usually supported or held when the fastening bolts are removed for the purpose of taking off the cover or head to gain access to the tank, and hence the cover or head becomes a dead weight to the operator in the operation of removing or replacing the cover, and if the operator should drop the cover, it is likely to damage the tank or the cover, besides the trouble and labor of getting it back into place. I aim to overcome these objections by providing means which will support the cover or head when the fastenings are removed and it is swung or moved to one side of the opening to expose the latter and enable

the operator to gain access to the boiler or vessel.

C is the cover or head, and D is the bracket or arm by which it is supported and hung on the metallic vessel or tank. The cover and bracket are placed and arranged within the vessel or tank A so as to be always on the inside thereof, both when the cover is adjusted against the boiler shell or tank A to fit close thereto around the edges of the opening B therein and when the cover and bracket are swung laterally to one side of the opening B to expose said opening and to enable the operator to gain access to the interior of the tank.

In the preferred embodiment of my invention, I pivotally support the bracket D on the inside of the tank A and at one side of the opening therein, see Figs. 2 and 3, and the cover is attached at its middle to the free end of the bracket by the pivot joint E, see Figs. 2 and 3, whereby the cover is fitted to turn on the bracket which enables the bracket and cover to be swung in a small space within the tank, boiler, or vessel and also adapts the cover to accurately fit to its seat against the shell of the vessel, around the opening B therein. The bracket D is in the shape shown by Fig. 4 of the drawings, and it is furnished at one end with an eye d, and at its other end with an eye d'. This bracket is attached to the shell of vessel A by means of the angle plate F, one side of which is fitted against and bolted to the shell of vessel A, as at f in Figs. 2 and 3 of the drawings, and the other side of this angle plate is furnished with the spaced eyes g, g, between which is fitted the eye d of the bracket D in such a way that the eye d is in line with the eyes g, g, to enable a pivot bolt G to be passed through the aligned eyes and thereby pivotally connect the bracket D to the boiler shell A. The inner or rear face of the cover C is furnished with the bosses or lugs c, c, which are spaced to accommodate between themselves the eye d' of the bracket D, and through these eyes c, c, d', is passed the bolt E which pivotally connects the cover to the bracket, the bolts E, G, of the cover and bracket being parallel to each other so that the cover and bracket can easily turn in adjusting the head away from or to the tank.

In some boilers, tanks or vessels, the interior construction thereof is such, or the contents of the tank so nearly fill the same, that it is necessary for the cover to be adjusted in a small space, and in my invention this is provided for by pivotally connecting the cover to the bracket so that the cover can be turned on the bracket when the parts are swung out of the way of the opening, and also to enable the cover to be accurately adjusted to its seat against the shell of boiler. After the fastening bolts which clamp the cover tightly against the shell of the boiler have been detached, the cover is forced inward and turned on the bracket D so that the bracket stands away from the tank and the cover stands at right angles to the bracket in the position shown by dotted lines in Fig. 3, and then the bracket is swung around toward the tank and the head again turned to lie alongside of the bracket in the position shown by dotted lines also in Fig. 3, whereby the cover is supported in place at one side of the opening B in the tank. To adjust the cover or head against the shell of the boiler the bracket D is swung forward from the extreme folded dotted line position shown by Fig. 3 and the cover turned thereon so that the head or cover will be brought accurately to the position it occupied before the opening B was exposed, thus enabling the cover to fit closely around the edges of the opening B and the gasket H to make the necessary tight joint between the tank A and the head C.

The head is clamped or forced tightly against the shell of the boiler or vessel by means of the bolts I, I, and the yokes J, J. The bolts I are provided with the heads i which are fitted in the way or channel i' cut or otherwise produced in the outer face of the head, and the middle part of the way or channel i' is enlarged at i^2 in Fig. 1 to enable the heads of the bolts to be fitted in or moved from the way or channel i' in the head. The yokes J are fitted against the tank to span the opening B therein, and through the perforated bosses, j, in these yokes are passed the threaded outer ends of the bolts I to adapt them to receive the nuts, j, by which the bolts I draw the head or cover C against the shell of the boiler to compress the gasket H between the head and shell of the boiler or vessel.

The operation and advantages of my improvement will be readily understood and appreciated by those skilled in the art from the foregoing description taken in connection with the drawings.

I am aware that changes in the form and proportion of parts and in the details of construction of the mechanism herein shown and described as an embodiment of my invention can be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications and alterations as fairly fall within the scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a steam boiler, or other metallic vessel, having an opening B therein, of a cover or head situated within said boiler or vessel, and an arm pivoted to the head or cover and pivotally supported on the inside of said boiler or vessel, substantially as and for the purposes described.

2. The combination with a steam boiler, or other metallic vessel, having an opening B therein, of an arm situated within said boiler or vessel and pivoted thereto at one side of the opening therein, and the head or cover also within the boiler or vessel and pivotally

supported on the arm to fold against the same, substantially as and for the purposes described.

3. The combination with a steam boiler, or other metallic vessel, having an opening B therein, and a head or cover within the boiler or vessel, of a swinging arm having its respective ends pivoted to the boiler and to the head by bolts or pins which are parallel to each other, substantially as and for the purposes described.

4. The combination with a boiler or vessel having an opening B therein, of an angle plate fixed to the inside of the boiler or vessel at one side of the opening therein, a horizontally swinging arm pivoted to the plate, a head or cover having spaced lugs, between which the free end of said arm is fitted, and a bolt or pin which pivotally connects the arm and head together, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. CAHALL.

Witnesses:
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LEWIS J. McCRAY.