No. 645,757. Patented Mar. 20, 1900.

F. R. SARTOR.

BOILER BRACE.

(Application filed Dec. 4, 1899.)

(No Model.)

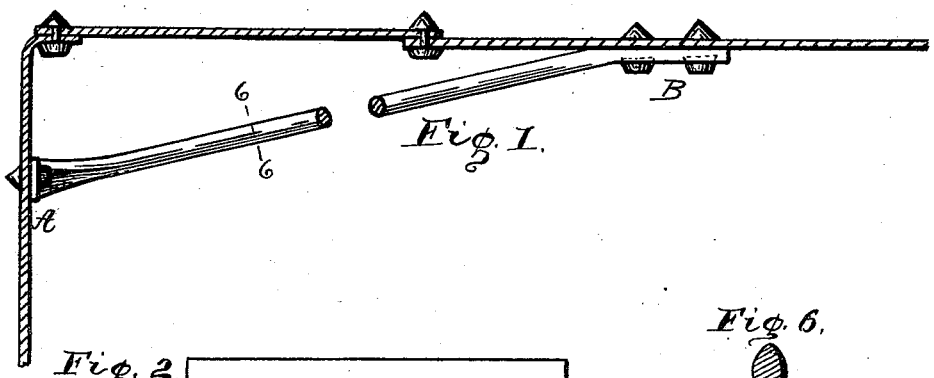


Fig. 1.

Fig. 6.

Fig. 2.

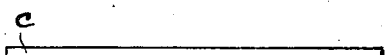


Fig. 3.

Fig. 4.

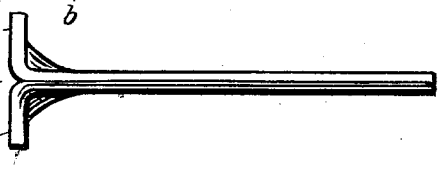


Fig. 7.

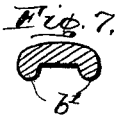


Fig. 5.

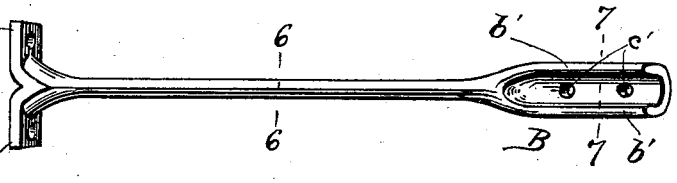


Fig. 8.

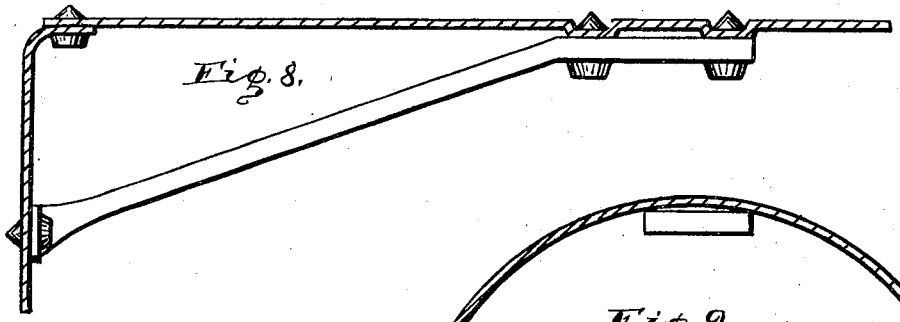
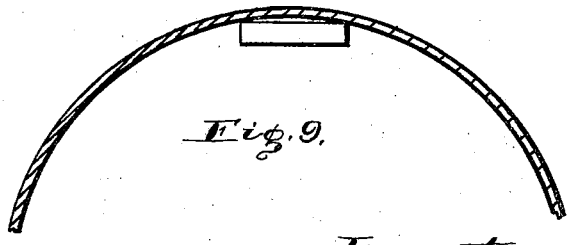


Fig. 9.



Witnesses;
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UNITED STATES PATENT OFFICE.

FRANK R. SARTOR, OF INDIANAPOLIS, INDIANA.

BOILER-BRACE.

SPECIFICATION forming part of Letters Patent No. 645,757, dated March 20, 1900.

Application filed December 4, 1899. Serial No. 739,100. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. SARTOR, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Boiler-Braces, of which the following is a specification.

This invention relates to improvements in braces for the inside of tubular boilers, the objects being to provide a stronger brace than is commonly used and also to provide a brace of such shape as will afford the least foothold for the accumulation of sediment.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a detail of a boiler in vertical section with my improved brace applied; Fig. 2, the blank from which the brace is to be formed; Fig. 3, a view of same with end split to form lateral members to be attached to end of boiler; Fig. 4, same, showing lateral members in operative positions and corner brace or fillet to additionally strengthen the brace at the bends; Fig. 5, a front view of the complete brace; Fig. 6, a section on the dotted line 6 6 of Figs. 1 and 5; Fig. 7, a section on the dotted line 7 7 of Fig. 5; and Figs. 8 and 9, longitudinal and transverse sections, respectively, of boilers having the old-style brace and showing the detrimental effects of the shear-cut action on the rivets.

Like letters of reference indicate like parts throughout the several views of the drawings.

Heretofore braces have been made by welding the flattened ends to the round body portion; but the white heat required to effect a weld requires the greatest care to avoid burning and thereby destroying the strength of the iron at the weld and has resulted in practice in the production of such uniformly-inferior braces as to cause the welded brace to be condemned by the underwriters of boiler insurance. Preferably, then, my improved brace will be a weldless one.

The blank, as shown in Fig. 2, is a bar of iron or steel, square in cross-section, which is split at one end a suitable distance to form the parts *b* and *c*. The bar is heated, but at no time is the temperature raised to a white heat or to a temperature anywhere near a degree which would be injurious. While in a heated condition the parts *b* and *c* are bent laterally to form the head A, and the body is upset on each side next to the bends to strengthen the brace at those points of weakness. The opposite end of the bar is hammered to form a broad thin foot B, the edges of which are turned to form the strengthening-ribs *b' b'* to keep the foot from breaking opposite the rivet-holes *c'*, which are punched through the foot.

Heretofore a flat foot has been used, which, by not following the contour of the cylindrical boiler, left a hollow between the edges of the foot through which the rivets holding the latter to the steel boiler-plates passed. This made a loose construction, which caused the boiler to leak around the rivets or had a tendency to pull off the heads of the rivets. In my brace the metal between the flanges or ribs *b' b'* is curved to fit the curvature of the boiler.

The bar between the head A and the foot B is drawn to the requisite size and is given an oval shape in cross-section, as shown in Fig. 6, to afford a minimum surface for the adherence of sediment, and this same object is kept constantly in view in the shaping of the whole brace.

I am aware of the patent for boiler-brace issued to McGregor January 8, 1895, No. 532,388, and do not claim the construction there shown.

Having thus fully described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

A brace or stay for boilers comprising a one-piece body portion having double-convex sides forming sharp edges to afford a minimum surface for sediment to gather, a head formed by splitting one end of the body and spreading the split ends, the corners formed by the bends being thickened as shown, and a foot having a surface next to the boiler sides curved to conform to the curvature of the boiler and having marginal ribs, substantially as described and shown.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 21st day of November, A. D. 1899.

FRANK R. SARTOR. [L. S.]

Witnesses:
JOSEPH A. MINTURN,
CHAS. A. FAILLES.