(No Model.)

G. H. DRAKE.

SUPPORTING LUG.

No. 491,091. Patented Feb. 7, 1893.

Fig. 2.

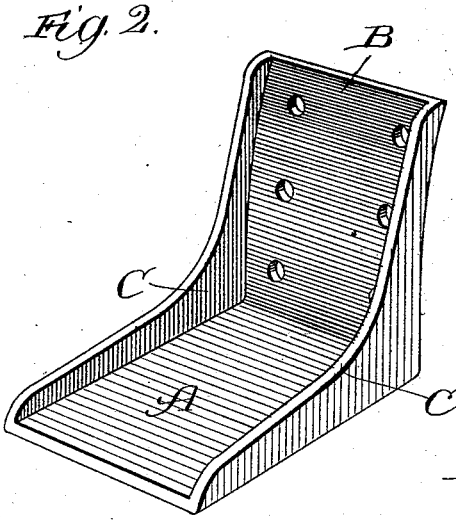


Fig. 3.

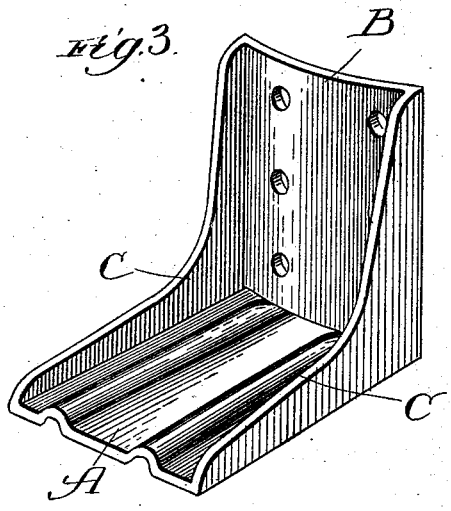


Fig. 1.

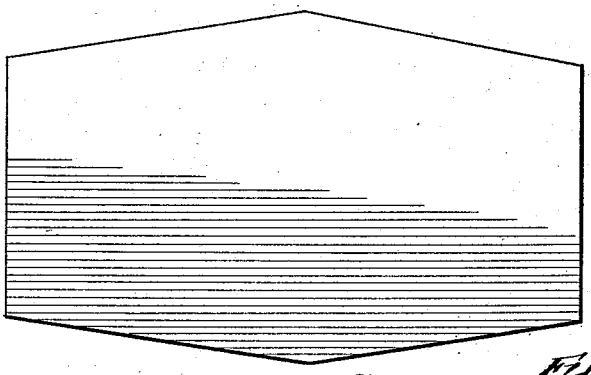


Fig. 4.

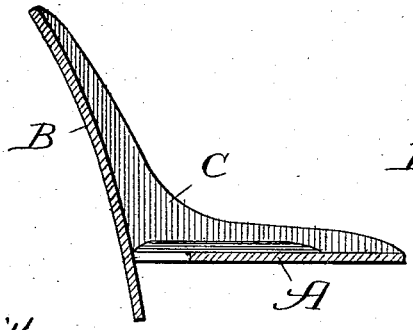
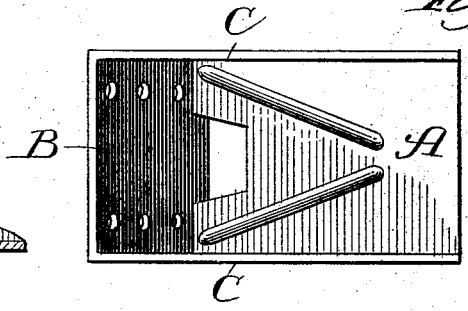


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE HENRY DRAKE, OF OMAHA, NEBRASKA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO ALFRED M. CASTLE, OF CHICAGO, ILLINOIS, AND WILLIAM J. WICKES, OF SAGINAW, MICHIGAN.

SUPPORTING-LUG.

SPECIFICATION forming part of Letters Patent No. 491,091, dated February 7, 1893.

Application filed December 17, 1891. Serial No. 415,333. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HENRY DRAKE, of Omaha, Nebraska, have invented certain new and useful Improvements in Supporting-Lugs, of which the following is a specification.

My invention relates to a supporting lug for boilers, and which may be also used for the support of other structures.

Prior to my invention boiler lugs have been constructed of cast metal. These lugs are necessarily heavy and a single lug for a standard boiler—say, five feet in diameter, would weigh at least one hundred pounds. In applying them to a boiler the only way in which a tight joint can be secured is by heading the rivet over from the inside of the boiler.

It is of course well known that boiler plate and cast iron have different rates of expansion and contraction, and a suitably tight joint cannot easily be secured or maintained between these metals of diverse nature. A cast metal lug is provided in the casting with the bolt or rivet apertures and necessarily their position being fixed the rivet holes in the boiler must be made to correspond. Accuracy of fit between the surface of the lug and the surface of the boiler is difficult to attain where the lug is cast. A further objection to cast boiler lugs arises from the fact that a power riveting machine cannot be used to rivet them on. The strain on these lugs is mainly at the angle between the upright and the horizontal members, the bracket being substantially L-shaped. In order to secure the proper strength at this point these lugs are necessarily made heavy.

In a patent issued prior to my invention, a boiler lug has been shown having its members re-enforced by ribs or flanges upon the interior angle of the lug and along its side margins. Said flanges however extend only partially up the sides of the vertical member and part way only along the top surface of the horizontal member of the lug. If a cast lug were provided with side flanges or webs sufficient to secure such additional strength as would permit a material reduction in the weight of the lug, these flanges would have to be so thick that the interior space for riveting would be encroached upon; and if the rivet holes are put too close together they weaken the lug.

It is the object of my invention to avoid all of the objections above pointed out; and to this end I construct a boiler lug from sheet metal, preferably sheet steel, by pressing, stamping or rolling it to produce a lug having the necessary upright and horizontal portions, and in the same operation I turn up the side margins of the blank so as to provide the lug upon its interior angle with marginal ribs or flanges of such width as to properly brace and integrally connect the two portions of the lug.

My invention will be understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of the blank from which my lug is formed. Fig. 2 is a perspective view of a lug adapted for use on a horizontal boiler. Fig. 3 is a perspective view of a lug for use on a vertical boiler. Fig. 4 is a sectional view of a modified form of the lug shown in Fig. 2; and Fig. 5 is a plan view of the lug shown in Fig. 4.

I prefer to make my improved lug as follows: I take a suitable blank of the form shown in Fig. 1, and which is preferably of steel boiler plate, and by means of a hydraulic press or bulldozing machine form it into the desired shape so that the portion A may be secured to the boiler and the portion B is adapted to rest on the brick work or other suitable foundation. In forming these parts, the dies will be adapted to turn up the sides of the blank and thus to form ribs C which are widest in a line drawn radially from the line on which the blank is bent to form the upright and horizontal portions, and which ribs extend along both said uprights and vertical portions, gradually decreasing in width toward their extremities. The portion A of the lug which fits against the boiler will be slightly curved to conform to the curved exterior of the boiler, and I preferably so form it that it extends below the part B so that it may be riveted to the boiler below as well as above the horizontal portion. The lower pro-

jecting portion will be held between the boiler and masonry on which the horizontal portion of the lug rests and will increase the capacity of the lug to sustain the weight of the boiler as it prevents it being moved away from the boiler while the masonry receives the weight of the boiler at both the top and side bearings of the lug. I also prefer to corrugate the horizontal portion of the lug as shown whereby to increase its strength, but this expedient, as well as the provision of the projecting portion of the lug, is not essential to the use of my broad invention.

Comparing the lug above described with the cast iron lug, it is not necessary to have the former weigh more than twenty-five pounds to sustain a greater weight than a cast iron lug weighing one hundred pounds and with the metal thereof disposed in the most advantageous manner heretofore practiced.

The tensile strength of cast iron as compared with that of steel may be stated approximately as one to four. The steel lug is of the same material, or may be, as the boiler itself, and therefore the lug and the boiler have the same rate of expansion and contraction. The steel lug may be formed with or without rivet holes in the process of manufacture and may be fitted to the side of the boiler and the holes drilled afterward. The rivets may be headed over either upon the inside or upon the outside of the boiler, which is not possible in using a cast iron lug as it is well known that the rivet must be headed over upon steel instead of cast iron to secure a suitable joint. Therefore cast lugs have always had the rivets headed upon the inside of the boiler.

The steel lug has its horizontal and vertical portions connected by the side flanges or ribs, but these being of the same thickness as the body of the lug do not interfere with the wide separation of the rivet holes and as many rivets as are necessary can be used. The rivets may be set by a power machine, there being no danger of breaking the lug as in the case of a cast lug. The portion of the lug which is secured to the boiler may be accurately fitted thereto if there be any inaccuracy upon the first application.

The many advantages of my improved construction over the cast iron lug above set forth will be readily recognized by those acquainted with the construction and use of such devices.

While I have described the use of a hydraulic press or bulldozing machine, it will be understood that my invention is not restricted to the use of the particular machines described for producing it, and that my improved lug may be made by pressing or stamping or even by rolling, although the latter method would be attended with many difficulties.

I do not limit my invention to a lug having a plurality of webs nor to the specific location of said webs, although the preferred construction has marginal ribs or flanges, and the method of making a lug from a blank sheared from a plate and the blank being widest at its middle and the lug being formed by bending it transversely and also longitudinally so as to turn up the marginal ribs or flanges is the best construction.

I claim:

1. A boiler lug constructed from a sheet or plate of metal so bent as to provide an upright and a horizontal member and marginal ribs or flanges connecting said members, substantially as described.

2. A boiler lug constructed from a blank of plate or sheet metal so bent as to provide two members angularly disposed with reference to each other and marginal ribs or flanges connecting said members and widest at the angle and gradually tapering toward and terminating at the extremities of said members, substantially as described.

3. A boiler lug constructed from sheet or plate metal and so bent as to provide two members angularly disposed with reference to each other and side ribs or flanges connecting said members, and one of said members having corrugations in its horizontal portion, substantially as described.

4. A supporting lug formed of metal plate bent to provide a vertical portion and a horizontal portion and said vertical portion having a part extending below the plane of the horizontal portion, substantially as described.

5. A boiler lug constructed from sheet or plate metal bent to provide an upright member adapted to be fitted to the boiler and a horizontal member adapted to rest upon the boiler support, and said lug having an integral strengthening rib or web extending longitudinally of its exterior and connecting the upright and the horizontal members of the lug, substantially as described.

GEORGE HENRY DRAKE.

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