

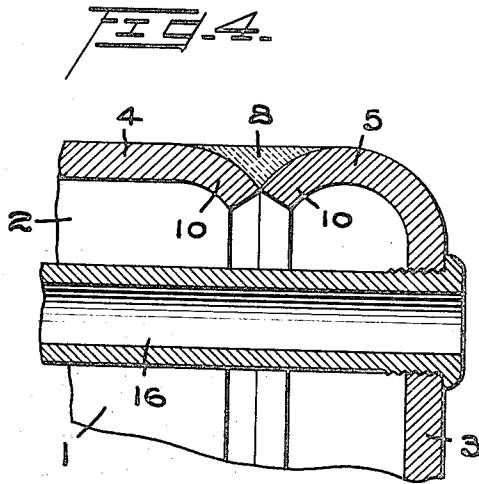
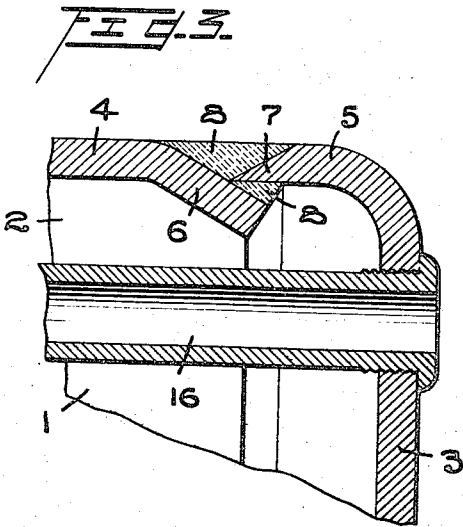
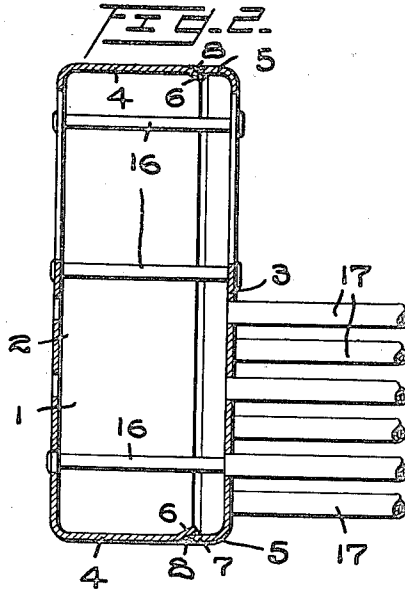
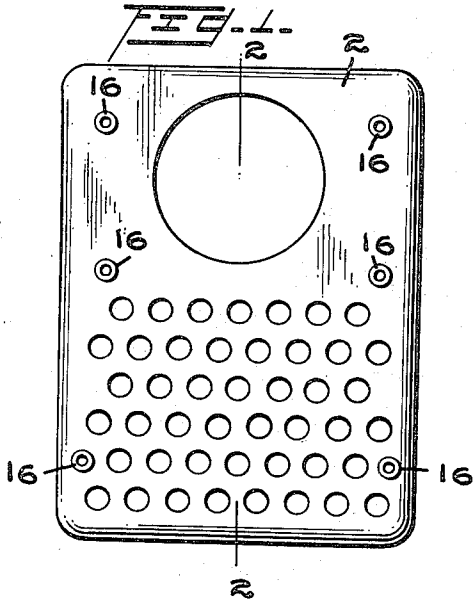
E. C. MEIER.
BOILER.

APPLICATION FILED APR. 30, 1915.

1,188,968.

Patented June 27, 1916.

2 SHEETS—SHEET 1.



Witnesses

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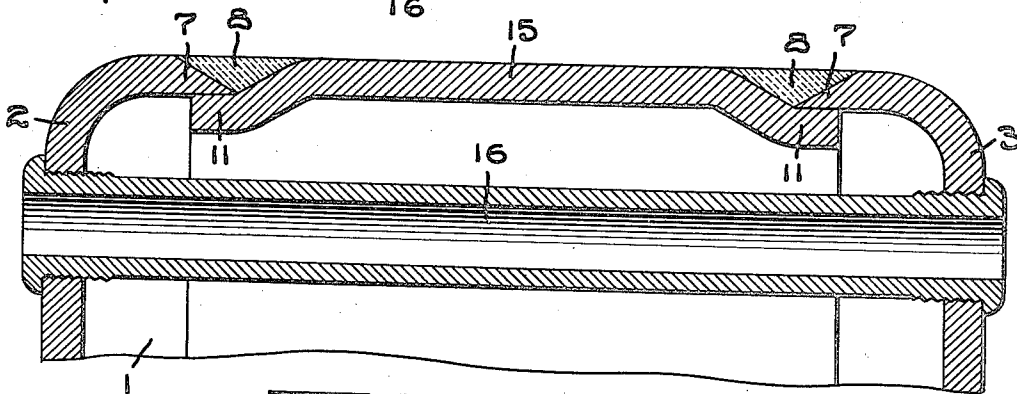
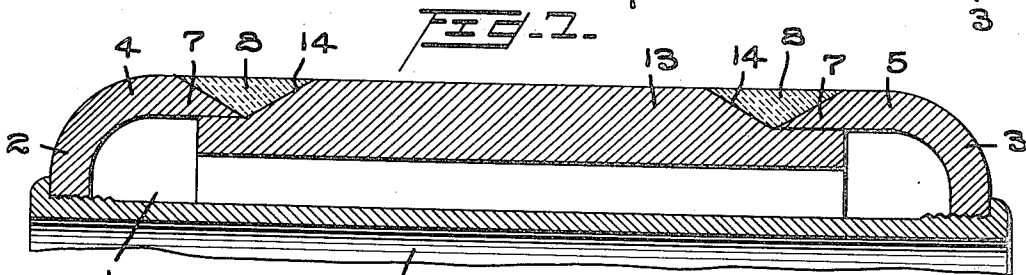
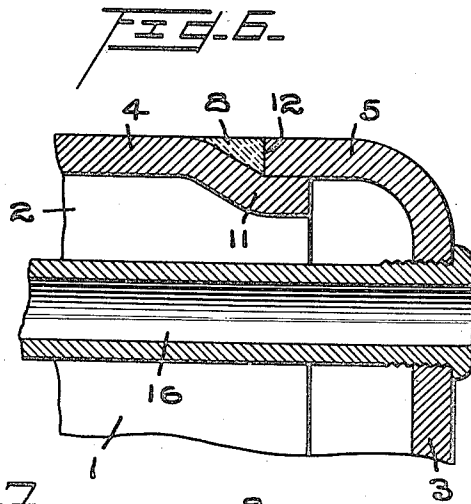
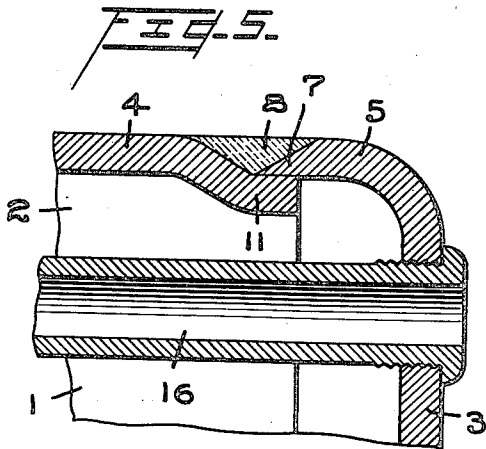
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EDWARD C. MEIER, OF PHOENIXVILLE, PENNSYLVANIA.

BOILER.

1,188,968.

Specification of Letters Patent. Patented June 27, 1916.

Application filed April 30, 1915. Serial No. 24,898.

To all whom it may concern:

Be it known that I, EDWARD C. MEIER, a citizen of the United States, residing at Phoenixville, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Boilers, of which the following is a specification.

My invention relates to improvements in boilers, the object of the invention being to provide an improved construction of water leg, box, or casing, in which the parts thereof are welded in an improved manner, whereby all pressure strains are resisted without employing rivets or similar attaching means.

A further object is to so connect the two parts of a casing having internal pressure as to insure the maximum of strength and durability of the welded joint.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1 is a view in front elevation illustrating a water leg or box. Fig. 2 is a view in section on the line 2—2 of Fig. 1 illustrating my improved construction. Fig. 3 is an enlarged fragmentary sectional view illustrating the improved welded joint shown in Fig. 2. Figs. 4, 5, 6, 7, and 8, are similar views illustrating various modifications.

While I shall hereinafter describe my invention in connection with a box or water leg, I would have it understood that the invention is not limited thereto, but I may employ my improved construction in any form of casing in which there is an internal pressure.

The box 1 as I shall hereinafter term the same, constitutes the water leg of a boiler, and in the form shown in Figs. 1, 2, 3, 4, and 5, is composed of two parts 2 and 3. The part 2 forms the front sheet of the box, and the part 3 the inner or tube sheet. Both of these sheets 2 and 3 are flanged at their edges, the inwardly projecting flange 4 of sheet 2 being appreciably longer than the inwardly turned flange 5 of sheet 3, the difference in length being desirable in order to locate the joint at one side of the center of the box, although the exact location of the joint is of course immaterial. The flange 4, at its extreme edge, is bent inwardly

at an angle forming a lip 6, which projects inside of the flange 5, and the latter at its extreme edge is preferably beveled as shown at 7 in Fig. 3. The outer faces of flanges 4 and 5 are in alinement, so that the angular disposition of the lip 6 and the beveled end 7 of flange 5 form a trough which is filled with welding material 8. The space between the inner face of the flange 5 and the lip 6 is also preferably filled with welding material 8. This welding is done in any approved manner, and when completed, the joint will be practically one integral structure. By reason of the construction above described, the maximum of surface is provided for the welding material, and the inwardly projecting lip 6 constitutes an arched joint which cannot be forced outward by internal pressure, because of the rigid backing of the joint.

In Fig. 4 I illustrate a modification in which the flanges 4 and 5 are both curved inwardly forming arched lips 10, and the welding material 8 is positioned in the trough formed by the inwardly curved lips.

In Fig. 5 the flange 4 is illustrated as having its lip 11 of general compound curvature, so that it fits against the inner face of the flange 5, lying smooth and flush therewith. In this case, the welding material 8 is positioned precisely as in Fig. 3.

Fig. 6 illustrates a modification in which the joint is precisely like Fig. 5, except that the end of the flange 4 is straight or at a right angle as shown at 12 instead of beveled as in the other form.

In Fig. 7 I show a construction of box in which the two members 2 and 3 are provided with inwardly turned flanges 4 and 5 of the same length and shape, which are secured to a butt strap 13. This butt strap is appreciably thicker than the sheets or members 2 and 3, and at its ends fits within and snugly against the inner faces of the flanges 4 and 5. The outer portion of the butt strap, at its ends, is beveled as shown at 14 forming together with the beveled ends 7 of the flanges 4 and 5, troughs for the reception of the welding material 8. This relatively thick butt strap is desirable for strengthening any means which may be attached thereto for coupling sections of the boiler.

In Fig. 8 I illustrate a modification which is precisely like the construction shown in Fig. 7, except that the butt strap 15 corre-

sponding to butt strap 13 is of the same thickness as the sheets 2 and 3, and at its ends is bent as shown in Fig. 5, so that its lips 11 are positioned against the flanges 4 and 5 as described in connection with Fig. 5.

In the drawings I have illustrated stay bolts 16 connecting the members of the box, and have shown ordinary boiler tubes 17 which are commonly employed in connection 10 with the inner sheet 3.

In all forms of my invention, the members are so connected and welded that the outer surface of the box is smooth, and the inner surfaces of the parts at the joint are 15 so shaped that any outward pressure serves to arch or bend the parts in the direction of greatest strength. I am therefore enabled to construct a box or casing without employing rivets, and which will sustain the maximum of internal pressure, and 20 hereinafter in the claims I shall use the term "casing" in its broadest sense to define any construction which is capable of my improvements.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider 25 myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

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

1. A water leg or box comprising sheet metal members spaced apart and having their edge portions extending toward each other into meeting engagement, and one of 40 said edge portions being so shaped as to form a trough between the edge portions, and welding material located in the trough

and flush with the outer faces of both of said edge portions, substantially as described. 45

2. A water leg or box comprising two members having edge portions engaging each other, one of said edge portions located at an incline and engaging an edge of the other edge portion, the edge portion of the 50 latter mentioned member being so shaped as to provide a surface inclined at approximately the same angle as the inclined edge portion of the first mentioned member whereby a V-shaped trough is formed between 55 the members, and welding material located in the trough and flush with the outer faces of both of said members, substantially as described.

3. A water leg or box comprising two 60 members having edge portions engaging each other, one of said edge portions located at an incline and engaging an edge of the other of said edge portions, said edge portion of the latter mentioned member 65 being so shaped as to provide a surface inclined at approximately the same angle as the inclined edge portion of the first-mentioned member whereby a V-shaped trough is formed between the members, welding 70 material located in the trough and flush with the outer faces of both of said members, and welding material located between the inclined portion of the first-mentioned member and the inner face of the other 75 member, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD C. MEIER.

Witnesses:

M. EDWIN J. HEILMAN,
S. W. FOSTER.