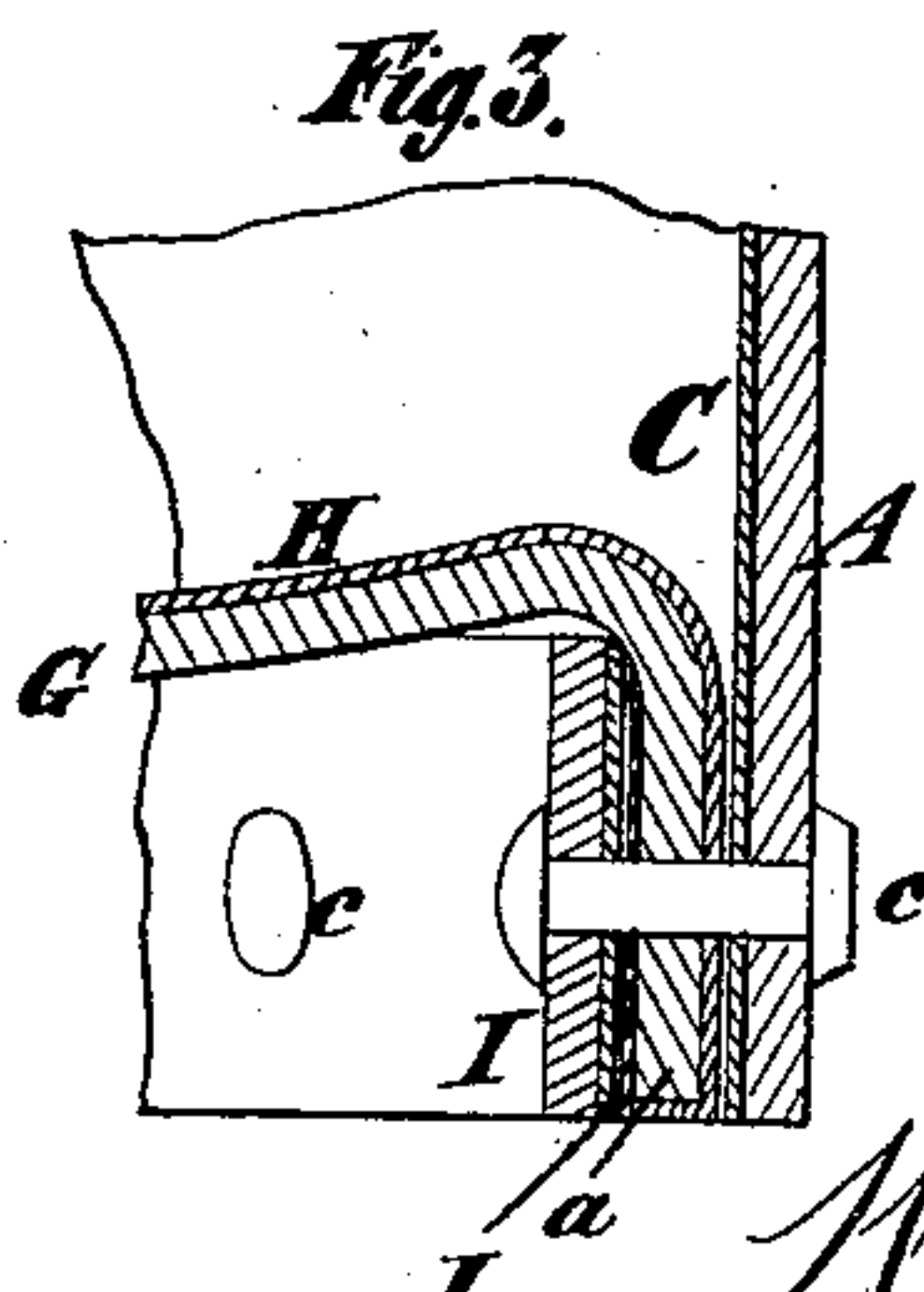
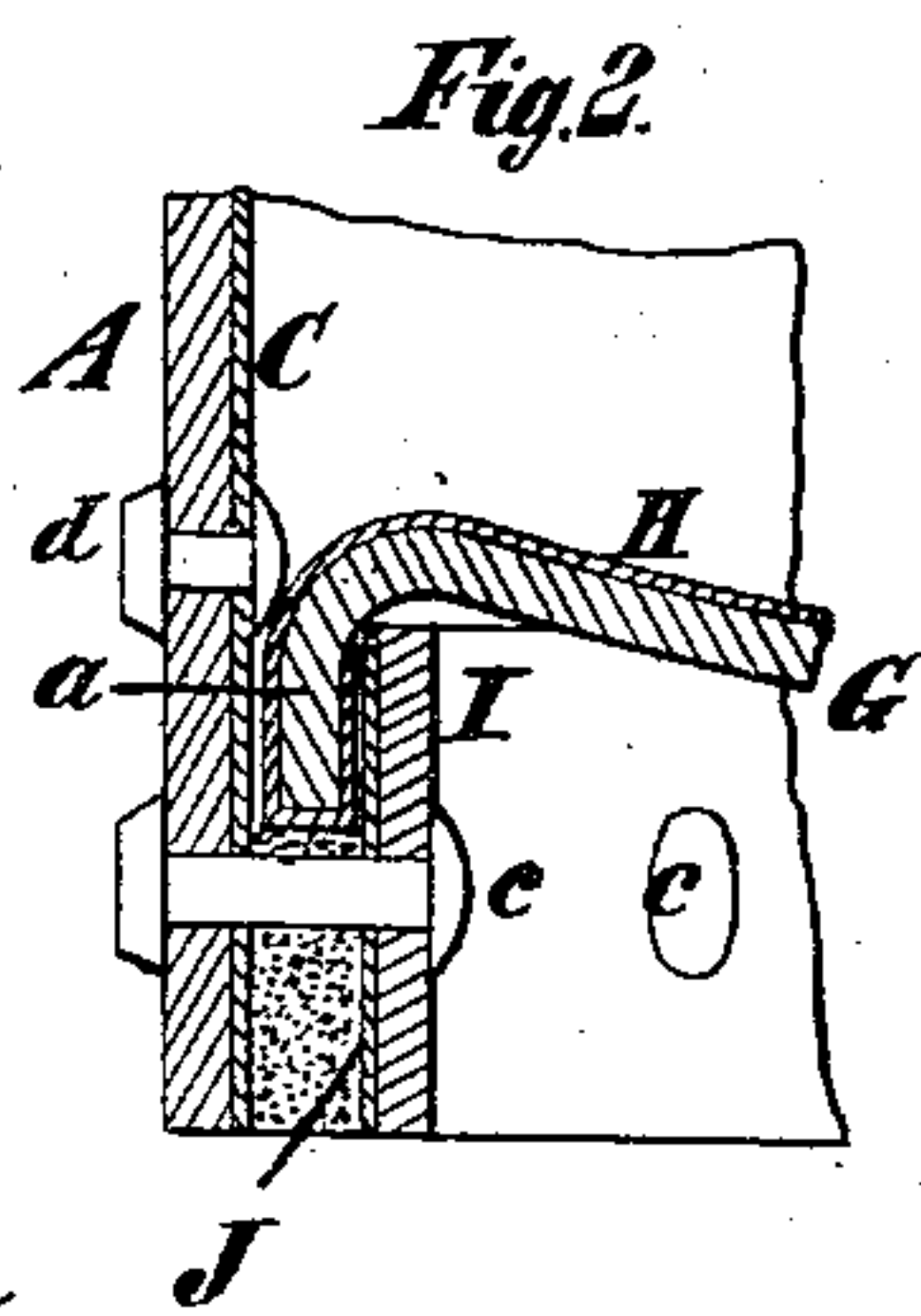
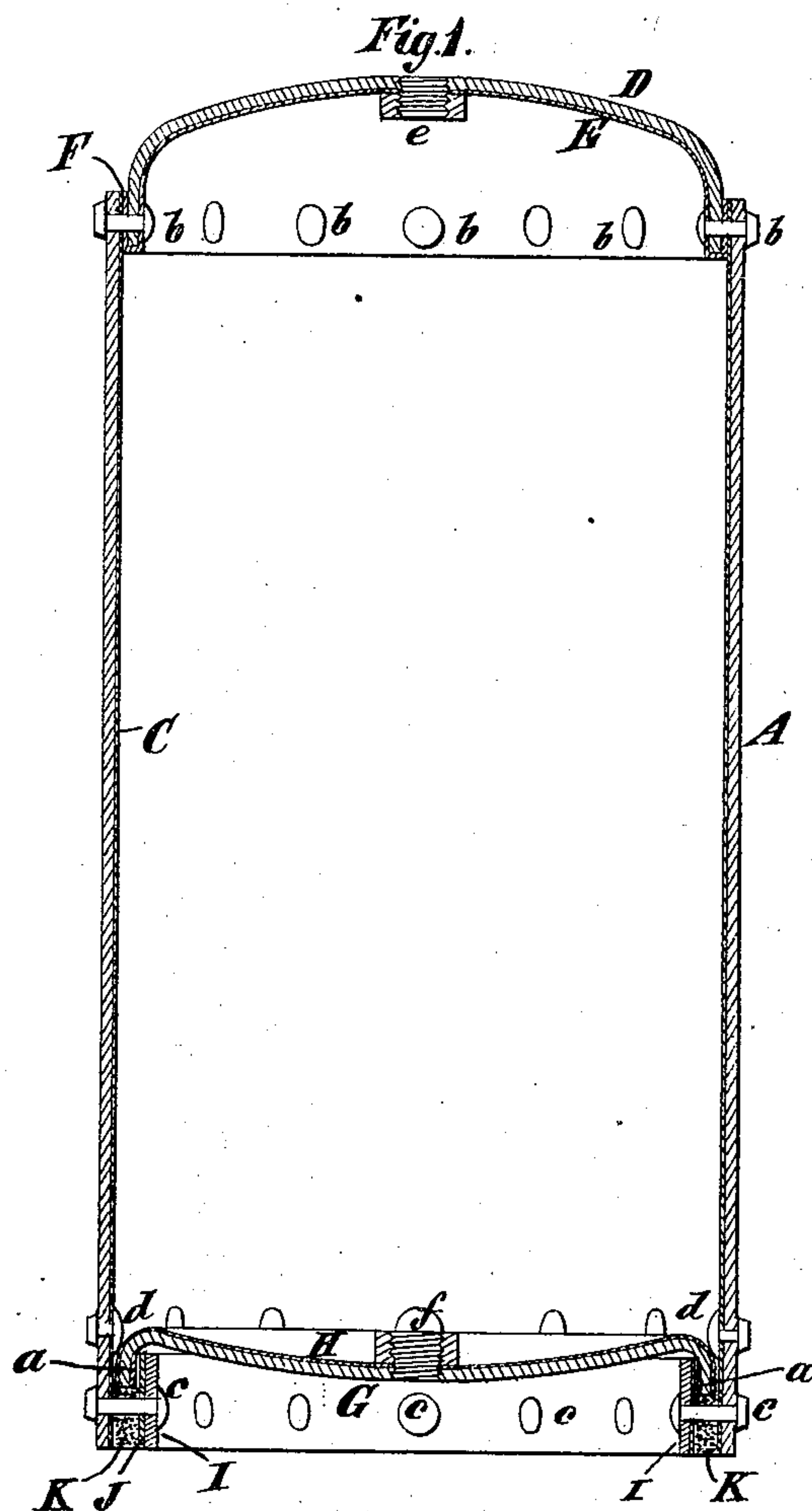


(No Model.)

W. L. BROWNELL.  
BOILER AND WATER HEATER.

No. 261,076.

Patented July 11, 1882.



*Witnesses*  
*T. J. Keane*  
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# UNITED STATES PATENT OFFICE.

WILLIS L. BROWNELL, OF BROOKLYN, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO APOLLOS SMITH AND ANNA J. BROWNELL, OF SAME PLACE.

## BOILER AND WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 261,076, dated July 11, 1882.

Application filed February 24, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIS L. BROWNELL, of Brooklyn, in Kings county, and State of New York, have invented a certain new and useful  
5 Improvement in Boilers or Water-Heaters, of which the following is a specification.

This improvement relates particularly to the water-boilers or heaters which are used in conjunction with ranges in houses.

10 The object of the improvement is to provide for more effectively securing a head or bottom or end in place.

To this end the improvement consists in the combination, with the body of a boiler or water-  
15 heater, of a head or end having an outwardly-turned flange inserted into said body, an independent ring inserted within and bearing directly upon said flange, and having its outer edge coincident, or nearly coincident, with the  
20 end of the body, and means for clamping said ring and body against opposite sides of said flange.

It also consists in the combination, with the body of a boiler or water-heater and a head  
25 having an outwardly-turned flange, of an independent ring fitting within said flange, all being disposed as particularly hereinafter described and claimed, so as to form an annular space for solder or molten metal, whereby a  
30 very tight joint may be produced.

Preferably the body of the boiler or water-heater, the head, and the independent ring will be copper-lined, to facilitate making a good soldered joint between them.

35 In the accompanying drawings, Figure 1 is a central vertical section of a boiler or water-heater embodying my improvement. Fig. 2 is a vertical section on a larger scale, illustrative of the joint between the body and an end; and  
40 Fig. 3, a vertical section on the same scale, illustrative of a modified form of joint between the body and an end.

Similar letters of reference designate corresponding parts in all the figures.

45 A designates the body of a boiler or water-heater. It may be made of cylindric form, and of cast or sheet iron or other suitable material. As shown, it has a lining of copper, and this

lining may consist of a sheet of copper, C, properly disposed within and fitted to the body.

50 D designates the head or upper end, which is made dome-shaped, as usual, in this example of my invention. As here shown, it is provided with a lining, E, which may consist of a sheet of copper. A ring of sheet-copper may advantageously be arranged between the body-  
55 lining C and the head D; or the head-lining may be bent around the edges of the head, as shown at F, thereby in effect forming such a ring. Rivets b, passing through the head-lin-  
60 ing E, the head D, the ring F, the body-lining C, and the body A, secure the several parts together.

G designates the bottom head or lower end of the boiler or water-heater. It is provided  
65 with a downwardly or outwardly extending flange, a, and has applied to its interior a lining of copper, H, which may be used in the form of a sheet, and preferably extends between the flange a and the body-lining C. As shown  
70 in Figs. 1 and 2, the flange a and lining H do not extend down to the bottom edge of the body A; but in the example of my invention shown in Fig. 3 they are made much deeper and extend to the lower edge of the body.

75 I designates a ring, which may be of cast or sheet iron or other suitable material. It fits within the flange a of the bottom G, and preferably has a ring, J, of copper, interposed between it and the body-lining C. This ring  
80 J may be of sheet-copper. Rivets c, passing through the ring I, ring J, body-lining C, and body A, secure the several parts together. In the form of my invention shown in Figs. 1 and  
85 2 these rivets do not pass through the flange a of the bottom head, G; but in the example of my invention shown in Fig. 3 they pass through this flange and the bottom lining, H, as well as through the other parts named. In the example of my invention shown in Figs. 1  
90 and 2, solder K will preferably be introduced in the annular space which is left between the ring I or the ring J, when the latter is used, and the body A or the body-lining C, when this is employed, and against the edge of the flange a.

95 The copper body-lining C and the ring J, of



copper, are advantageous, in that they enable the solder to be used so as to aid in forming a substantial and tight joint.

The bottom head, G, is preferably inserted in the body to such an extent that the ring I, when in place, will be flush with the bottom edge of the body A. The body is first inserted, then the ring I is introduced, and the rivets *c* are fastened in.

The linings, when used, are introduced with the parts to which they are respectively applied.

In lieu of solder, molten metal, preferably lead or zinc, may be used to fill the annular space left between the ring I or its lining-ring J, when the latter is used, in the example of my invention shown in Figs. 1 and 2.

The rivets *c* may be inserted and fastened after the solder or molten metal is in place, if desirable; or they may in some cases be entirely omitted in the form of my invention which is illustrated in Figs. 1 and 2.

In order to stay or brace the bottom head, G, against an upward thrust or blow when the rivets *c* do not pass through it, a ring may be fastened in place above the bottom to form an abutment for it; or rivets *d*, passing through the body A, or the body A and the body-lining C, may be employed to form an abutment for this purpose.

By my improvement I form a very strong and tight joint at a moderate cost, and with a less number of rivets than are ordinarily employed. Moreover, I avoid much expense of the labor which is ordinarily expended in chipping and calking.

A head secured in place according to my invention can be removed and replaced at much less expense than a bottom secured in the ordinary manner, and with much less danger of entailing damage to the component parts of the boiler or water-heater.

By the use of the independent ring I, great strength is imparted to the boiler or water-heater in direction transverse to its axis. It is preferable to providing the bottom with integral double flanges, because when either flange or the bottom itself becomes damaged all are rendered useless, whereas the independent ring can be used with a new bottom. Moreover, the double integral flanges produce a projection on the outside of the boiler or water-heater, which is obviated by my invention. It is obvious that the joint can be made with greater facility with the use of the ring I than where a bottom having double integral flanges is used.

The top head or upper end may be secured in place like the bottom or lower end, if desirable.

I provide the ends with the usual sockets, *e f*, for the attachment of the water-pipes.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the body of a boiler or water-heater, of a head or end having an outwardly-turned flange inserted into said body, an independent ring inserted within and bearing directly upon said flange, and having its outer edge coincident, or nearly coincident, with the end of the body, and means for clamping said ring and body against opposite sides of said flange, substantially as specified.

2. The combination, with the body of a boiler or heater, of a head having an outwardly-turned flange inserted into said body, so that the body extends beyond the edge of the flange, and an independent ring inserted within the flange and projecting outward beyond the edge thereof, whereby an annular space for solder or molten metal is formed between said body and ring beyond the edge of the flange, substantially as specified.

3. The combination, with the head G, provided with the flange *a*, of the body A and ring I, bearing against opposite sides of the flange and projecting beyond the same, and the solder or metal K, introduced between the body and ring and against the edge of the flange, substantially as specified.

4. The combination of the body A, the head G, provided with the flange *a*, the ring I, the solder or metal K, and the rivets or bolts inserted through said body and ring, and also passing through the solder or metal K, substantially as specified.

5. The combination, in a boiler or water-heater, of a body of iron or analogous metal, a copper lining therefor, a head of iron or analogous metal having an outwardly-extending flange, a copper lining or linings covering the head and the interior and exterior of the flange, an independent ring of iron or analogous metal extending beyond the edge of the flange, and solder or molten metal introduced between the ring and the lining of the body and beyond the edge of the flange, substantially as specified.

6. The combination, in a boiler or water-heater, of a body of iron or analogous metal, a copper lining therefor, a head of iron or analogous metal having an outwardly-extending flange, a copper lining or linings for said head and the interior and exterior of said flange, an independent ring of iron or analogous metal inserted within said flange, and a ring of copper covering the same, both said rings extending beyond the edge of said flange, and solder or molten metal introduced between the rings and body-lining and beyond the edge of said flange, substantially as specified.

WILLIS L. BROWNELL.

Witnesses:

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A. C. BROWNELL, Jr.