Nov. 29, 1949 N. D. RICE 2,489,587

CONNECTION FOR FURNACE MEMBERS

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Fig. 1

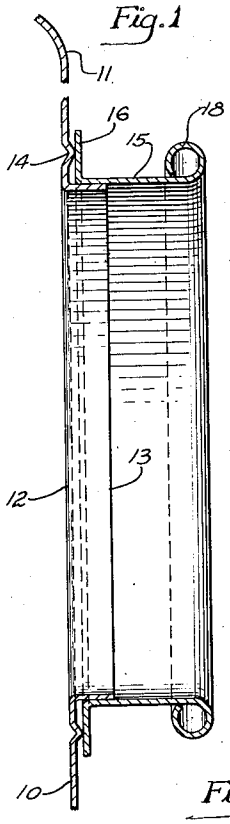


Fig. 2

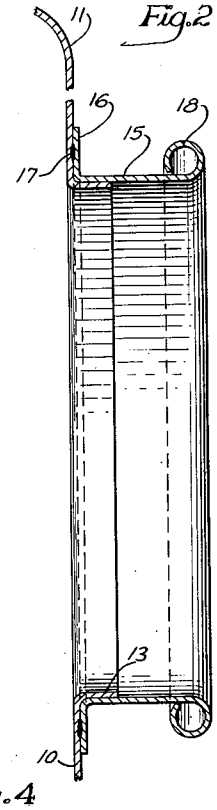


Fig. 3

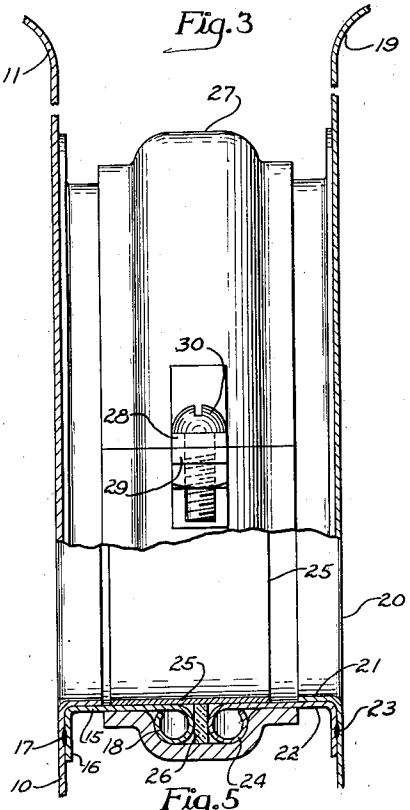


Fig. 4

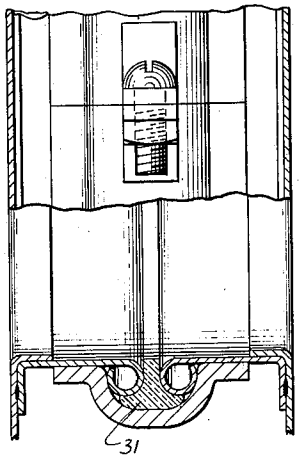
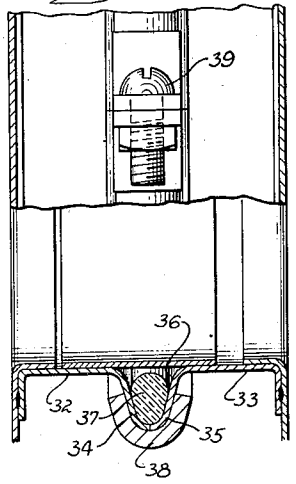


Fig. 5



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Fig. 6

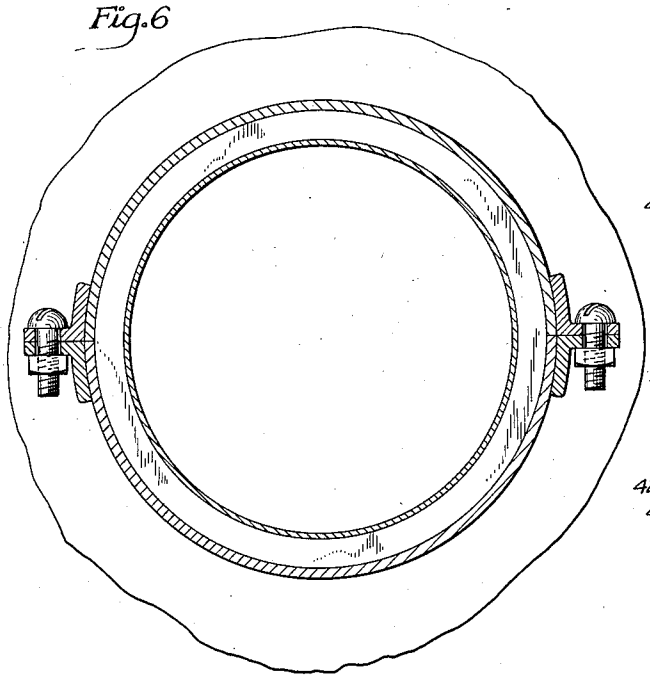


Fig. 7

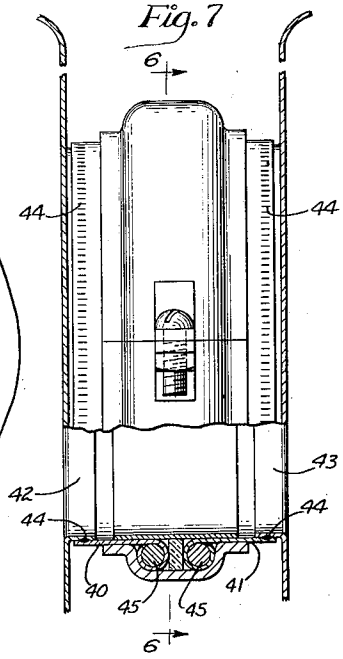


Fig. 8

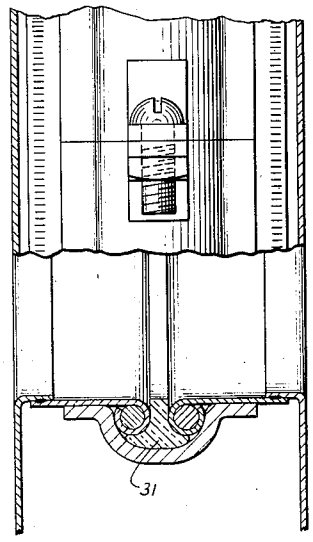
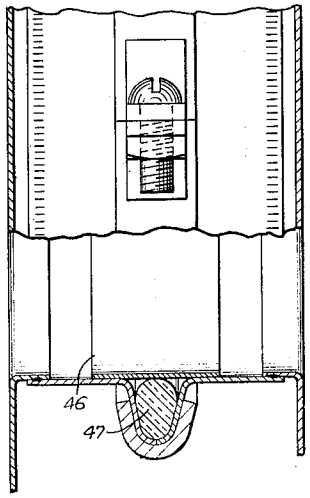


Fig. 9



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CONNECTION FOR FURNACE MEMBERS

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Application June 6, 1947, Serial No. 753,132

1 Claim. (Cl. 285—129)

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The elements of a floor furnace or space heater, such as the combustion chamber and radiator are usually made of sheet metal and are preferably positioned close together with flues or connections therebetween for the passage of the gases of combustion. On account of the limited space, it is difficult to weld such flue connections by hand or other welding methods. The present invention provides means for eliminating hand welding, and welding on of flanges on the flues, and making such necessary joints or connections in a particularly simple and efficient manner.

Other objects are to eliminate the hand welding of the flue to the heat chamber or combustion chamber or other parts of the furnace and press welding the same, thereby making leak-proof joints wherever such connections are necessary. The flues are connected to the radiator or other parts of the furnace or vent pipes in a similar manner and these flue members are held together by means of a special locking method which will be described hereinafter.

The accompanying drawings illustrate different forms of the invention and in these drawings,

Fig. 1 is a sectional view of a portion of combustion chamber showing the side wall with the flue connection in position to be welded thereto;

Fig. 2 shows the same parts after the welding has been completed;

Fig. 3 is a sectional view showing the completed connection between two of the furnace members as, for instance, a combustion chamber and a radiator;

Fig. 4 is a sectional detail similar to Fig. 3 but showing modified form of construction;

Fig. 5 is also a sectional detail showing a further modification;

Fig. 6 is a transverse sectional view taken substantially through the center of the connection shown in Fig. 7;

Fig. 7 is a sectional view showing a further modification; and Figs. 8 and 9 are sectional details showing further modifications.

As shown in these drawings, 10 is one side or wall of a furnace member such as a combustion chamber 11 which is provided with a flue opening 12 defined by an integrally formed outwardly extending annular flange 13. Integrally formed embossments or projections 14 are formed around the flange for welding purposes. A cylindrical flue member 15 fits closely over the flange 13 and has an outwardly extending flange 16 which engages with the embossments 14 for press welding these parts together. After the welding has been performed in the usual manner, as indicated at 17, the flange 16 lies against the outer surface of the side wall 10 as shown in Fig. 2 and is tightly secured thereto so that there is no possibility of leakage at this point. The outer end of the flue member 15 has a bead or curl 18. The radiator 19 is prepared in a similar manner to complete the flue connection with the combustion chamber. It has an opening 20 which is disposed opposite to the opening 12 and is defined by flange 21. The flue member 22 is press welded to the side of the radiator as indicated at 23 making a tight joint and this member is also provided with a curl or bead 24 similar to the bead 18. A retainer ring or band 25 is fitted closely in the flue member 15 and telescopingly engages with the flue member 22 when these parts are brought together to complete the connection. This band also covers or closes the space between the beads 18 and 24 which engage with a gasket 26 formed of heat-proof or refractory material satisfactory to resist the comparatively high heat of the furnace. This retainer ring or band also serves in assembling the parts as it may be fitted in one of the flue members as for instance, the member 15 and, if desired, may be attached thereto preparatory to being inserted in the other flue member. The connection between the combustion chamber and the radiator is completed by means of a channel shaped clamping ring 27 which fits over the beads 18 and 24. This ring is preferably split and the two sections are provided with lugs 28 and 29 which are engaged by bolts 30 for drawing the parts together.

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The inner surfaces of the clamping ring are such that when the ring is tightened, the beads 18 and 24 are forced toward each other and against the gasket 26, thus making a tight connection or seal between the beaded ends of the flue members 15 and 22. As shown particularly in Fig. 3, the clamping ring has outwardly extending projections or flanges which fit closely against the outer walls of the flue members, thus serving to reinforce and strengthen the joint. The combination of the inner reinforcing ring or band 25 with these flange portions of the clamping ring 27 serve to keep the joint tight and prevent the escape of flue gases which might pass through the connection. This arrangement provides a leak-proof connection or joint between any two furnace members such as the combustion chambers and radiators or other similar parts. For instance, it will also be noted that a similar connection may be made for the vent or stovepipe connection for the furnace or

wherever it may be desirable to connect the parts without welding.

In the modification shown in Fig. 4, the retainer and guide ring as shown in Fig. 3 is omitted and a special form of gasket 31 is provided for making a tight closure between the beads. This gasket is of substantially T-shape in cross section with the main stem extending inwardly a sufficient distance and having curved engaging faces contacting the beads whereby when the clamping ring is tightened, a tight joint is made between the flue members.

In the modification shown in Fig. 5, the beads are omitted from the flue members and the corresponding members 32 and 33 are provided with outwardly extending annular projections or flanges 34 and 35 which meet to form an annular channel 36 in which is placed a gasket 37. The flanges 34 and 35 are drawn together by a split clamping ring of substantially U-shape in cross section, the ends of this ring being drawn together by means of bolts 39.

The modified form shown in Figs. 6 and 7 is similar to that shown, but in this instance the flue members 40 and 41 fit over the flanges 42 and 43 of the furnace members and are welded around the periphery as indicated at 44. The beads of these flue members are also provided with wires 45 such as commonly used in such beads. The clamping arrangement is the same as that shown in Fig. 3.

The modification shown in Fig. 8 is similar to the one just described but has the specially formed gasket 31 as shown in Fig. 4. The particular form shown in Fig. 9 is similar to that shown in Fig. 7, but has the gasket and clamping ring arrangement of the form shown in Fig. 5. It is also provided with a retainer and guide ring 46 for covering the opening between the flanges and for supporting the gasket 47.

From this description, it will be seen that I provide a novel and effective connection for use between furnace members such as combustion chambers and radiators or for other uses which is particularly adapted for connecting such parts where the space is limited and hand welding is objectionable.

While I have shown and described my invention with several modifications, I do not wish to be limited to the particular construction thus shown and described as changes may be made in order to adapt the same for different conditions or for connecting different members without departing from the scope of the invention.

What I claim is:

A connection for furnaces, having three point sealing means which consist in the combination with a furnace combustion chamber and a radiator having coacting oppositely disposed flue members terminating in outwardly extending beads, a retainer and sealing band fitted closely in one of the flue members and telescopingly engaging with the other flue member and closing the space between said members and reinforcing the adjacent portions of the flue members, an annular gasket between said beads and fitting closely around the retainer band, a split channel-shaped clamping ring fitting over said beads and having outwardly projecting flanges fitting closely against the outer walls of the flue members, and means for tightening said ring, the arrangement being such that when the ring is tightened, it will force the beads against the gasket and will also press the flue members against the retainer band and its flanges will fit tightly against the outer walls of the flue members, said parts coacting to reinforce the joint and to make a tight closure having three points of sealing in order to prevent the escape of gases.

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