March 29, 1932. H. R. MOFF 1,851,962

HEATING APPARATUS

Filed Nov. 9, 1929

Fig. 1.

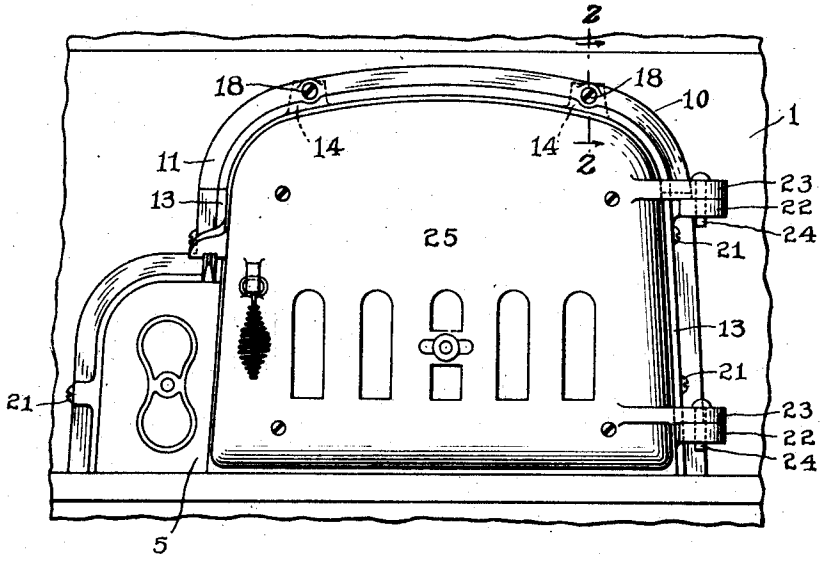


Fig. 2.

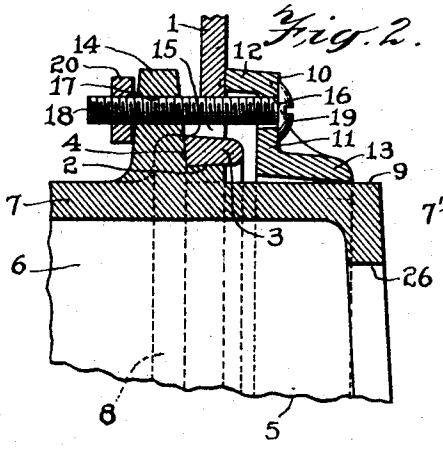
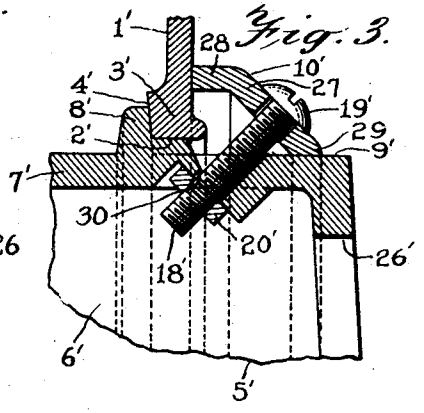


Fig. 3.



Herbert R. Moff INVENTOR

BY

his ATTORNEY

Patented Mar. 29, 1932 1,851,962

UNITED STATES PATENT OFFICE

HERBERT R. MOFF, OF AMHERST, OHIO, ASSIGNOR TO THE FOX FURNACE COMPANY, OF ELYRIA, OHIO, A CORPORATION OF OHIO

HEATING APPARATUS

Application filed November 9, 1929. Serial No. 405,892.

My invention relates to new and useful improvements in heating apparatus, and more particularly to the construction of a joint for uniting certain parts of a heating apparatus.

An object of my invention is to provide a joint construction which will effectively seal the union between cooperating elements.

Another object is to provide a sealed joint in which the united parts may have relative movement to permit expansion or contraction.

The invention consists in the improved construction and combination of parts, to be more fully described hereinafter, and the novelty of which will be particularly pointed out and distinctly claimed.

In the accompanying drawings, to be taken as a part of this specification, I have fully and clearly illustrated a preferred embodiment of my invention and a modification thereof, in which drawings—

Figure 1 is a front elevation of a portion of a heating apparatus embodying my invention;

Fig. 2 is a detail view in section on the line 2—2 of Fig. 1, but with the door or closure member removed, and

Fig. 3 is a detail view in section of a modification.

Referring to the drawings by characters of reference, 1 designates a wall member such as the enclosing casing of a warm air furnace or the like. Through the wall member is an aperture 2, the side and top edges of which have a marginal transverse flange 3, the inside face of which has a slight draft or upward inclination away from the plane of member 1, as at 4. Extending through the aperture 2 is a casing member 5, such as the fuel charging throat of the combustion chamber casing, or the neck or throat of the ash-pit casing. Extending vertically on the side walls 6 and across the top wall 7 of member 5, is an external flange 8 which laterally engages or abuts the inside face of wall member 1 at the flange 3, and has a draft corresponding to the draft 4 of flange 3, so that there is surface engagement between members 1 and 5. The member 5 extends beyond or outside of member 1 so that the side and top walls of member 5 provide a bearing surface 9 transverse to the plane of member 1. At the sides and across the top of member 5 in a substantially vertical plane, is a plate member 10 which may be in several lengths. The member 10 has a substantially vertical central web 11 and substantially parallel oppositely directed, substantially horizontal edge portions or flanges 12, 13. The end face of portion or flange 12 engages the outside face of member 1, while the under face of flange 13 engages the surface 9. On the top wall 7 are lug members 14 which are alined with holes or apertures 15 through member 1 and which apertures are positioned between flanges 3 and 12. Through the web 11 are holes or apertures 16 alined with apertures 15. Extending through apertures 15 and 16 and an aperture 17 in member 14, is a clamping member or bolt 18 having a head or part 19 engaging the web of member 10, and a nut or the like 20 engaging the lug member 14, so that tightening the bolt 18 draws the flange 12 against member 1 and the under face of flange 13 against surface 9 of casing member 5, and through member 10 clamps flanges 3 and 8 tightly together. The apertures 15 are larger than the shanks of bolts 18, so that the members 1 and 5 may have relative movement. The lengths of member 10 which overlie the side walls 6 of member 5 are preferably secured in clamping position against members 1 and 5 by bolts or the like 21 which extend through the flange or edge portion 13 and the side walls 6 of member 5. On the member 10 at one side of member 5, are vertically spaced horizontally extending supporting arms or members 22 which cooperate with hinge arms 23 pivoted thereto by pins 24 and carrying a door or closure member 25 for closing the opening or entrance 26 of member 5.

In the modification, Fig. 3, the similar parts are designated by the primes of the reference characters which are applied to the parts in Figs. 1 and 2. The plate member 10′ has its web portion 27 in a plane at substantially forty-five degrees to the surface 9′, and the edge portions or flanges 28, 29 of member 10′ extend at ninety degrees to each other, so that they are substantially perpendicular to the

member 1′ and surface 9′ respectively. Through the walls of member 5′ are apertures 30, the axes of which are perpendicular to the plane of web portion 27. The bolts 18′ extend through portion 27 and apertures 30. The nuts 20′ bear on the inside of member 5′ to draw the flanges 28 and 29 into engagement with member 1′ and surface 9′, and to draw the flanges 3′ and 8′ into tight engagement.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a device of the character described, a wall member having an aperture, a casing member extending through said aperture and providing a surface transverse to and outside of said wall member, a plate member engaging said wall member and said transverse surface, and means engaging said plate member intermediate the engagement thereof with said wall member and said casing surface and acting to clamp said plate member to said wall member and to said transverse surface.

2. In a device of the character described, a wall member having an aperture, a casing member extending through said aperture and providing a surface transverse to and outside of said wall member, a plate member having opposite edge portions respectively engaging said wall member and said transverse surface, said plate member having an aperture, and clamping means secured to said casing member and extending through said plate aperture and having means engaging said plate member to clamp said plate member to said wall member and to said transverse surface.

3. In a device of the character described, a wall member having an aperture, a casing member extending through said aperture and providing a surface transverse to and outside of said wall member, said casing member having a flange engaging the inside face of said wall member, a plate member engaging said transverse surface and the outer face of said wall member, and means engaging said plate member intermediate the engagement thereof with said wall member and said casing surface and acting to clamp said plate member to said wall member and to said transverse surface.

4. In a device of the character described, a wall member having an aperture, a casing member extending through said aperture and providing a surface transverse to and outside of said wall member, said casing member having a flange in lateral engagement with the inside face of said wall member, a plate member engaging said wall member and said transverse surface, and means engaging said plate member intermediate the engagement thereof with said wall member and said casing surface and acting to clamp said plate member to said wall member and to said casing member and clamping said wall member to said flange.

5. A heating apparatus of the character described, comprising a furnace wall member having an aperture therethrough, a hollow casing member for access to the interior of said apparatus and extending through said aperture and providing a surface transverse to and outside of said wall member, said casing member having a flange member in lateral engagement with the inside face of said wall member, a plate member having its opposite edges engaging said transverse surface and the outside face of said wall member, said plate member and said wall member having alined apertures, and means extending through said alined apertures and having clamping engagement with said plate member and said casing member whereby tightly to clamp said plate member to said wall member and to said transverse surface and tightly to clamp said wall member to said flange member.

6. A heating apparatus of the character described, comprising a furnace wall member having an aperture therethrough, a hollow casing member for access to the interior of said apparatus and extending through said aperture and providing a surface transverse to and outside of said wall member, said casing member having a flange member in lateral engagement with the inside face of said wall member, a plate member having its opposite edges engaging said transverse surface and the outside face of said wall member, said plate member and said wall member having alined apertures, a lug member on said casing adjacent the inside face of said wall and having an aperture therethrough alined with said alined apertures, and means extending through all of said alined apertures and having clamping engagement with said plate member and said lug member whereby tightly to clamp said plate member to said wall member and to said transverse surface and tightly to clamp said wall member to said flange member.

7. A heating apparatus of the character described, comprising a furnace wall member having an aperture therethrough, a hollow casing member for access to the interior of said apparatus and extending through said aperture and providing a surface transverse to and outside of said wall member, said casing member having a flange member in lateral engagement with the inside face of said wall member, a plate member having a web portion inclined to said wall member and having edge flanges extending from said web portion and transverse respectively to said wall member and to said transverse surface, said web portion and said casing member having alined apertures, and means extending through said alined

apertures and having clamping engagement with said plate member and said casing member whereby tightly to clamp the edge flanges of said plate member to said wall member and to said transverse surface and tightly to clamp said wall member to said flange member.

In testimony whereof I have hereunto signed my name this 5th day of November, 1929.

HERBERT R. MOFF.