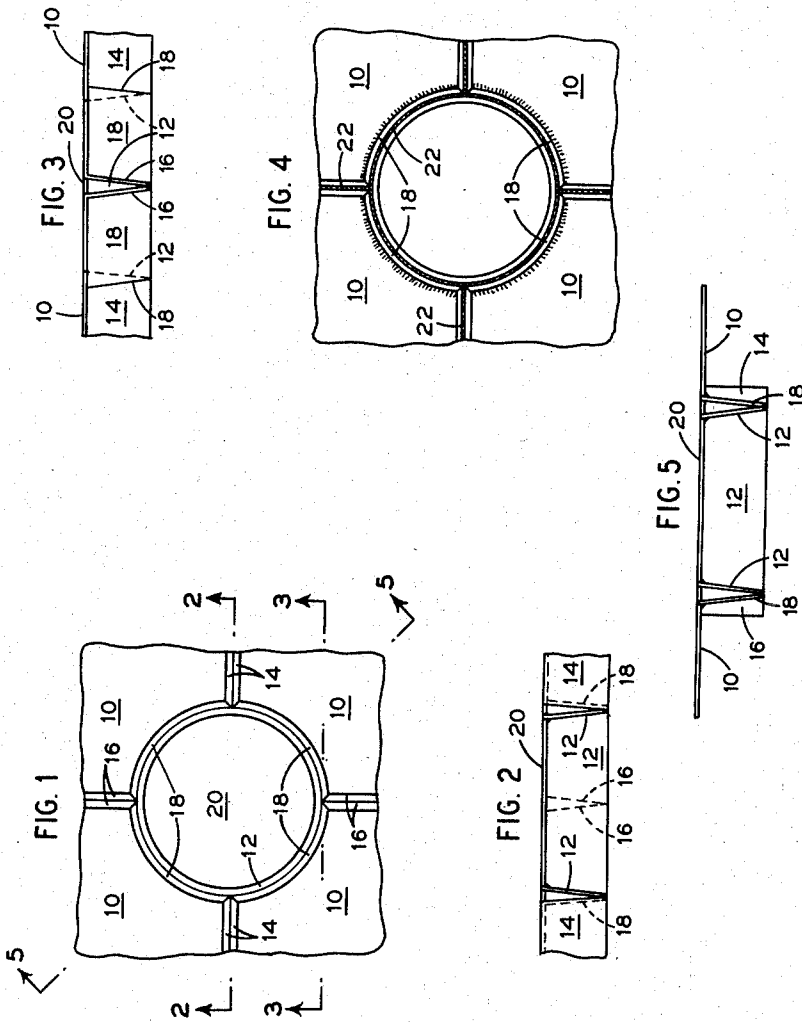


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PANEL WALL CONSTRUCTION

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PANEL WALL CONSTRUCTION

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5 Claims. (Cl. 189-34)

The present invention relates to the construction of gas-tight metallic walls subject to thermal expansion and contraction in several directions and more particularly to the construction of gas-tight casings adapted to enclose a space containing a gaseous fluid under pressure. The invention is particularly adapted for use in the construction of a gas-tight enclosure for a boiler, for example, as an outer wall for the combustion chamber, or for other heated chambers and hot gas conducting passages.

In accordance with the invention, a flexible gas-tight horizontal or vertical metallic wall for an industrial structure subject to thermal expansion and contraction in all directions, is formed by a plurality of metal panels arranged contiguously about a hollow metallic member of circular cross-section and having marginal flaring flexible flanges. The hollow metallic member is closed at one end. The outer edge portions of the flexible flanges of adjacent panels are joined in gas-tight relation to each other and to the opposite end of the hollow metallic member. The flexible flange portions joined to the opposite end of the hollow metallic member are arranged to flare in the direction of the closed end of the metallic member at an acute angle to the circular wall thereof. This wall arrangement provides a gas-tight enclosure with complete freedom of expansion and contraction in all directions, the flexible flange portions at the sides of adjacent panels allowing for longitudinal and transverse relative movement of the panels with respect to each other while expansions and contractions in directions diagonal thereto are provided for by the flexible flange portions of each panel joined to the centrally disposed hollow metallic member.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which I have illustrated and described a preferred embodiment of my invention.

Of the drawings:

Fig. 1 is an elevation of a portion of a vertical metallic wall constructed in accordance with the invention;

Fig. 2 is a plan section taken along the line 2-2 of Fig. 1;

Fig. 3 is a plan section taken along the line 3-3 of Fig. 1;

Fig. 4 shows the vertical wall of Fig. 1 as viewed from its opposite side; and

Fig. 5 is a view taken along the line 5-5 of Fig. 1.

The metallic wall of the invention is formed by a plurality of co-planar panels 10 arranged contiguously and symmetrically about a hollow metallic member 12 in the shape of a truncated cone and provided with horizontal and vertical marginal flaring flexible flanges 14 and 16 at their adjacent edges and along the portion 18 of each panel adjacent the side of the cone. Each panel has each of its marginal flanges disposed in a plane at an

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angle of greater than 90° to the plane of the main body portion of the panel, with the flanges at adjoining sides of each panel divergent outwardly away from the source of heat. The metallic member or cone 12 extends outwardly away from the heat source and is closed at one end by a seal welded cover 20 arranged in substantially the same plane as the panels 10. The outer edge portions of the flexible flanges 14, 16 and 18 of adjacent panels are joined in gas-tight relation to each other and to the base end of the cone 12 as by a continuous seal weld 22. The flexible flange portions 18 joined to the base end of the cone 12 are arranged to flare in the direction of the top end of the cone at an acute angle to the side thereof.

The flared construction of the flanges 14, 16 and 18 and the welded connection therebetween provide a flexible gas-tight construction which permits the thermal expansion and contraction of the panels by bending of the flexible flanges. The horizontal flexible flanges 14 allow for expansion and contraction of the panels in a vertical direction, the vertical flexible flanges 16 allow for relative movement of the panels with respect to each other in a horizontal direction, and the flexible flange portions 18 of each panel joined to the centrally disposed cone 12 provide for expansions and contractions in diagonal directions.

While in accordance with the provisions of the statutes I have illustrated and described herein the best form and mode of operation of the invention now known to me, those skilled in the art will understand that changes may be made in the form of the apparatus disclosed without departing from the spirit of the invention covered by my claims, and that certain features of my invention may sometimes be used to advantage without a corresponding use of other features.

What is claimed is:

1. In apparatus subject to thermal expansion and contraction, a flexible gas-tight wall comprising a multiplicity of metallic panels each formed with an arcuate shaped corner, a hollow metallic member of circular cross-section closed at one end and disposed interjacent the arcuate shaped corners of said panels, said panels being formed with marginal flaring flexible flanges at their adjacent edges and along the arcuate shaped corners, and means joining in gas-tight relation the outer edge portions of the flexible flanges of adjacent panels to each other and to the opposite end of said metallic member, the flexible flange portions joined to the opposite end of said metallic member flaring in the direction of said one end of said metallic member at an acute angle to the circular wall thereof.

2. In apparatus subject to thermal expansion and contraction, a flexible gas-tight wall comprising a multiplicity of metallic panels each formed with an arcuate shaped corner, a hollow metallic truncated cone-shaped member of circular cross-section closed at one end and disposed interjacent the arcuate shaped corners of said panels, said panels being formed with marginal flaring flexible flanges at their adjacent edges and along the arcuate shaped corners, and means joining in gas-tight relation the outer edge portions of the flexible flanges of adjacent panels to each other and to the opposite end of said metallic member, the flexible flange portions joined to the opposite end of said metallic member flaring in the direction of said one end of said metallic member at an acute angle to the circular wall thereof.

3. In apparatus subject to thermal expansion and contraction, a flexible gas-tight wall comprising a multiplicity of co-planar metallic panels each formed with an arcuate shaped corner, a hollow metallic truncated cone-shaped member of circular cross-section closed at one end and disposed interjacent the arcuate shaped corners

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of said panels, said panels being formed with marginal flaring flexible flanges at their adjacent edges and along the arcuate shaped corners, and means joining in gas-tight relation the outer edge portions of the flexible flanges of adjacent panels to each other and to the opposite end of said metallic member, the flexible flange portions joined to the opposite end of said metallic member flaring in the direction of said one end of said metallic member at an acute angle to the circular wall thereof.

4. In apparatus subject to thermal expansion and contraction, a flexible gas-tight wall comprising a multiplicity of co-planar metallic panels each formed with an arcuate shaped corner, a hollow metallic truncated cone-shaped member of circular cross-section closed at its truncated end and disposed interjacent the arcuate shaped corners of said panels, said panels being formed with marginal flaring flexible flanges at their adjacent edges and along the arcuate shaped corners, and means joining in gas-tight relation the outer edge portions of the flexible flanges of adjacent panels to each other and to the base end of said metallic member, the flexible flange portions joined to the base end of said metallic member flaring in the direction of the truncated end of said metallic member at an acute angle to the side thereof.

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5. In apparatus subject to thermal expansion and contraction, a flexible gas-tight wall comprising four metallic panels each formed with an arcuate shaped corner, a hollow metallic truncated cone-shaped member of circular cross-section closed at its truncated end and disposed interjacent the arcuate shaped corners of said panels, said panels being arranged in substantially the same plane as the closed end of said member and being formed with marginal flaring flexible flanges at their adjacent edges and along the arcuate shaped corners, and means joining in gas-tight relation the outer edge portions of the flexible flanges of adjacent panels to each other and to the base end of said metallic member, the flexible flange portions joined to the base end of said metallic member flaring in the direction of the truncated end of said metallic member at an acute angle to the side thereof.

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