July 25, 1939. E. H. NILSON ET AL 2,167,000

SUPPORTING BRACKET FOR CYLINDRICAL VESSELS

Filed Dec. 10, 1937

FIG. 1.

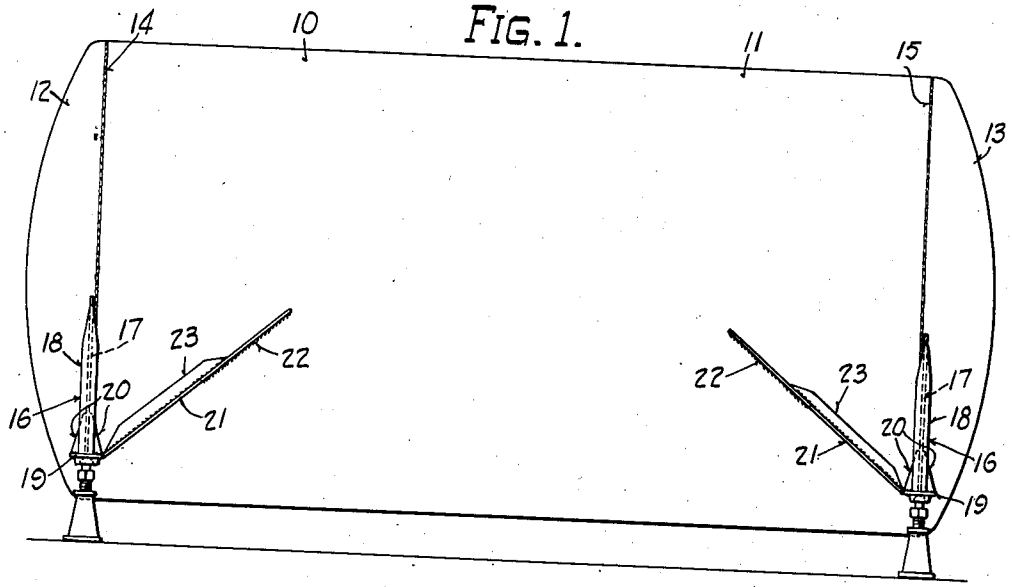


FIG. 2.

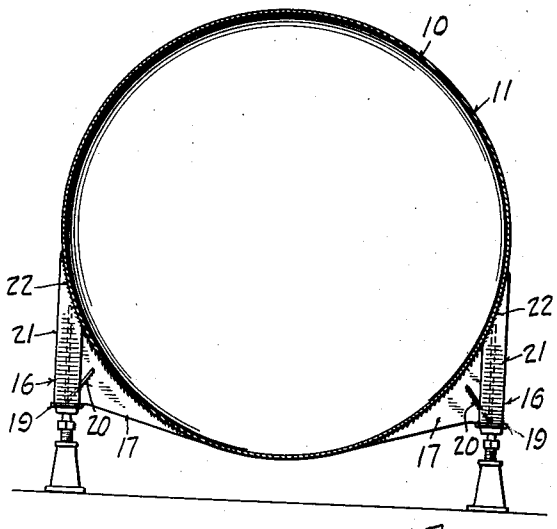


FIG. 3.

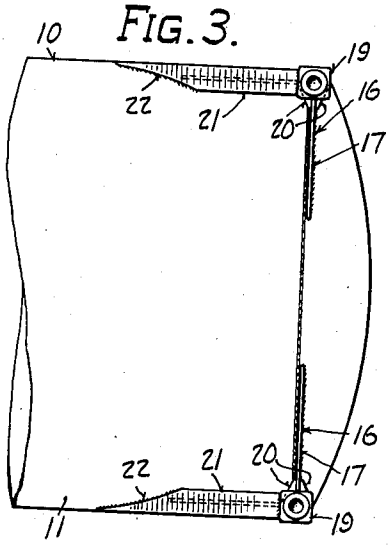
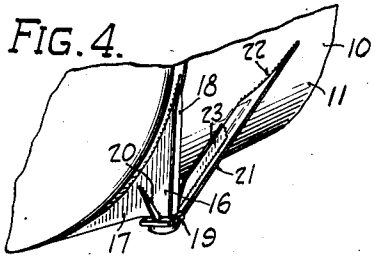


FIG. 4.



Eric H. Nilson
Fritz A. Carstens
INVENTORS.

BY Elwin A. Andrus
ATTORNEY.

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SUPPORTING BRACKET FOR CYLINDRICAL VESSELS

Eric H. Nilson and Fritz A. Carstens, Milwaukee, Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis., a corporation of New York

Application December 10, 1937, Serial No. 179,055

3 Claims. (Cl. 248—146)

This invention relates to supporting brackets for horizontal cylindrical vessels and is an improved construction of the bracket disclosed in United States Letters Patent No. 2,092,165 issued to William R. Kepler, September 7, 1937.

The invention is particularly adapted to thin walled vitreous enamel lined beer storage vessels of large diameter and length.

An object of the invention is to provide a simple and effective support for vessels of the type indicated.

Other objects of the invention will become apparent upon reference to the specification and accompanying drawing.

In the drawing:

Figure 1 is a side elevational view of a longitudinal cylindrical vessel embodying the present invention.

Fig. 2 is a transverse sectional view of the vessel shown in Figure 1;

Fig. 3 is an elevational view of one end of the vessel viewed from the bottom in Figure 1; and

Fig. 4 is a perspective view of a portion of the vessel showing the bracket.

In a vitreous enamel lined vessel, to be used for the storage of beer or other liquids affected by contact with metal, it is important that the lining remain intact and that therefore no localized deflection or strain in the wall occur.

In practice it has been found that the least deflection of the vessel wall is obtained by supporting the vessel on four brackets arranged two at each head, as illustrated in the drawing.

Referring to the drawing, a horizontally disposed vitreous enamel lined vessel 10 has a cylindrical body portion 11 and dished heads 12 and 13. Heads 12 and 13 are secured to the body portion 11 by welds 14 and 15 respectively.

Each bracket 16 comprises a substantially triangular fin plate 17 edge-welded to the lower portion of the vessel head along the circumferential line of the so-called knee or knuckle of said head and having its outer edge in a vertical plane tangential to the vessel wall. A stiffening flange 18 is provided on the outer edge of the fin plate. A foot plate 19 is welded to the outer portion of the lower edge of fin 17 and to flange 18. A gusset plate 20 is welded to each side of the fin 17 and to the top of foot plate 19.

A brace plate 21 is welded to the inner end-edge of foot 19 and is angularly disposed to engage the cylindrical wall of the vessel in a zone removed from the plate 17. The outer edge of the brace is approximately diagonally tangential to the cylindrical wall and the inner edge is cut away at its upper end to form a curve complementary to the curve of the wall it engages. The brace 21 is secured to the wall along its curved engaging edge by the weld 22. A stiffening flange 23 is welded to the upper face of the brace 21. By securing the brace to the vessel as described the vessel wall provides an arched area which resists deflection.

As explained in the above mentioned patent the brackets must not only support the vessel under load in use without damage to the vessel, but must support the vessel during its period of heating for the purpose of fusing the enamel lining during manufacture.

By welding the bracket members to the vessel wall in edgewise relation and by employing members of approximately the same thickness as that of the vessel wall, the heat for fusing the enamel is permitted to uniformly heat the vessel wall and thereby prevent differences in temperature due to heat conduction to and from the vessel by the brackets.

The brace 21 supports fin 17 against bending by carrying a support back into the vessel wall where the brace engages the wall in a diagonal circumferential line on an arched portion which resists deflection.

The improved brackets, as above explained, permit the uniform firing of a vitreous enamel lining in a vessel and the subsequent cooling of the vessel without injury to the enamel. The brackets also properly support the finished vessel in filled condition and protect it against excessive deflection and consequent injury to itself or its vitreous enamel lining.

Various embodiments of the invention may be employed without departing from the spirit and scope of the invention as defined in the following claims.

We claim:

1. In combination with a horizontally positioned vitreous enamel lined cylindrical vessel, a pair of brackets at each head disposed on opposite sides of the lower half of the vessel, each bracket comprising a vertical fin edge-welded to the vessel along a circumferential line at the head and a foot plate welded to the outer lower edge of said fin, and a brace plate welded to said foot plate and inclined upwardly and diagonally engaging the cylindrical body of the vessel on a curved line and edge welded to the vessel along said line of engagement.

2. In combination with a horizontally posi-

tioned vitreous enamel lined cylindrical vessel, a pair of brackets at each head disposed on opposite sides of the lower half of the vessel, each bracket comprising a vertical fin edge-welded to the vessel along a circumferential line at the head, a foot plate welded to the outer lower edge of said fin and a gusset plate welded to said fin and foot plate, a brace plate welded to said foot plate and inclined upwardly and diagonally engaging the cylindrical body of the vessel along a curved line and edge welded to the vessel along said line of engagement, and a reenforcing web edge welded to a face of said brace plate.

3. In combination with a horizontally disposed cylindrical vessel, a supporting bracket secured to the side wall thereof, and a brace extending diagonally from said bracket to engage the side wall of said vessel on a curved line, said brace being welded to said side wall along said curved line.

ERIC H. NILSON.
FRITZ A. CARSTENS.