

April 8, 1941.

D. E. LARSON

2,237,308

CONTAINER

Filed Feb. 17, 1939

3 Sheets-Sheet 1

Fig. 1.

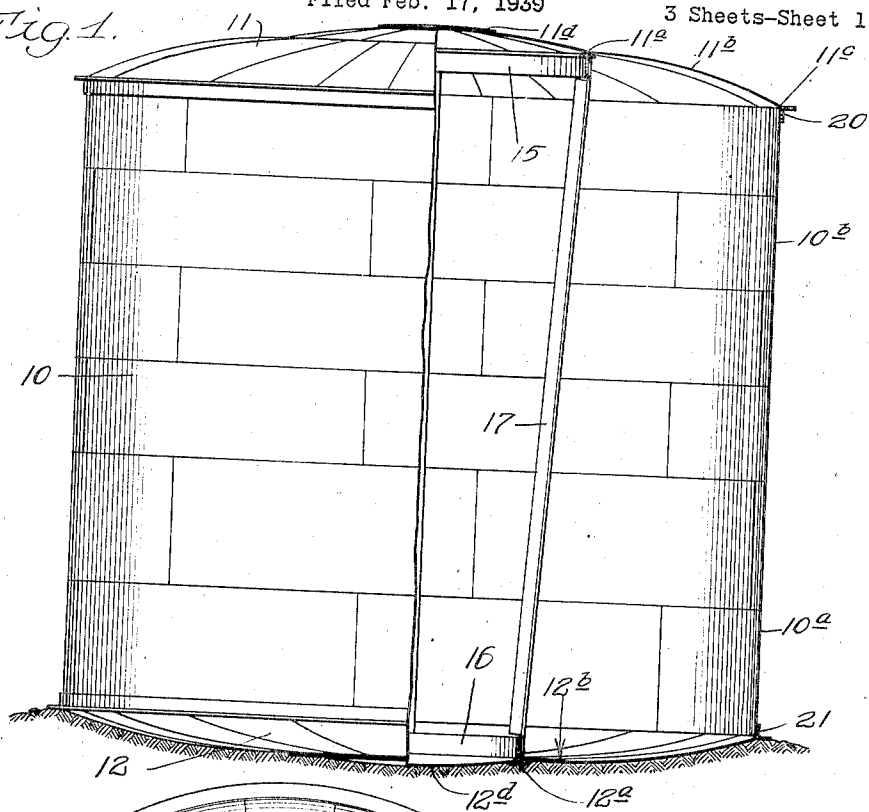
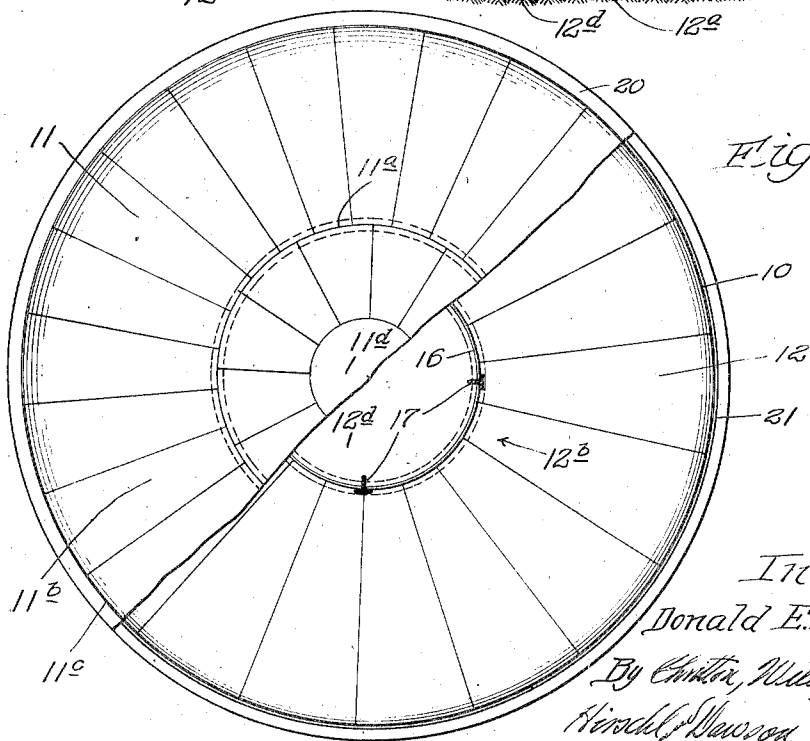


Fig. 2.



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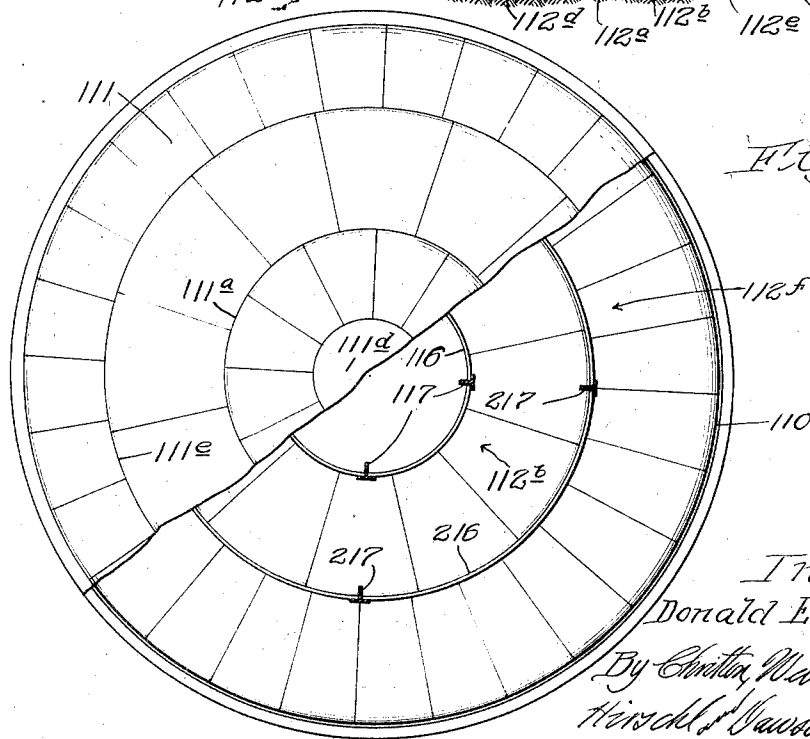
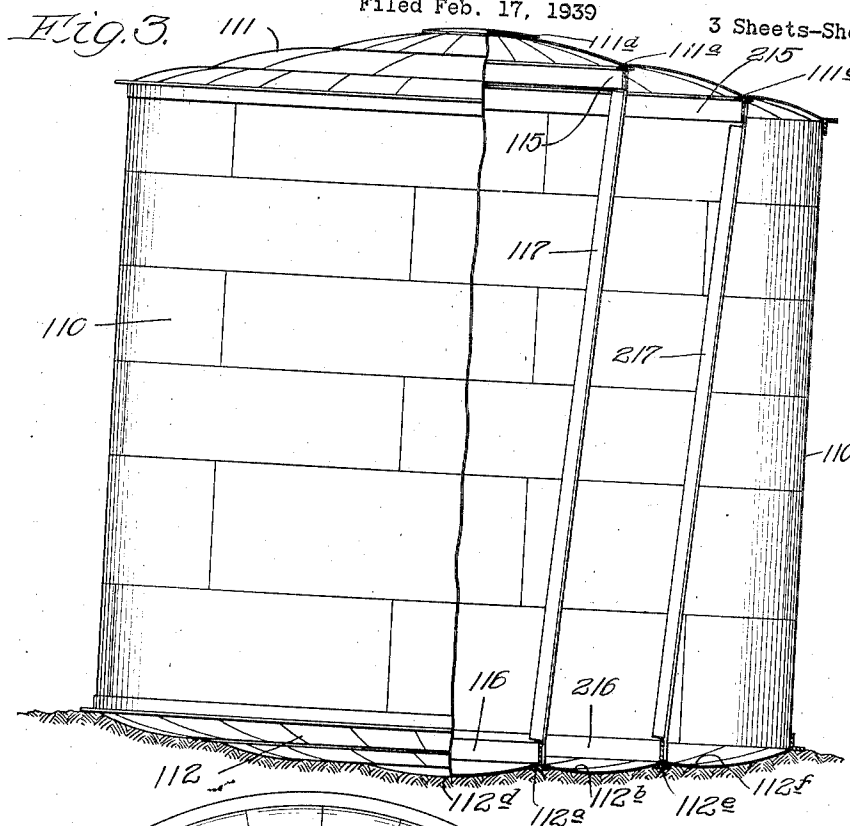
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3 Sheets-Sheet 2



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Fig. 5.

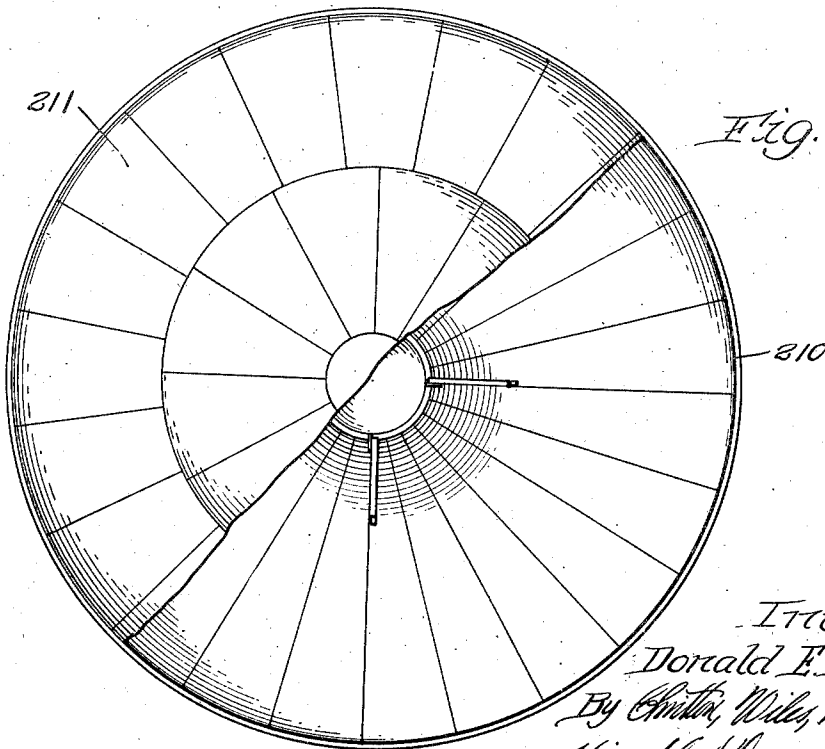
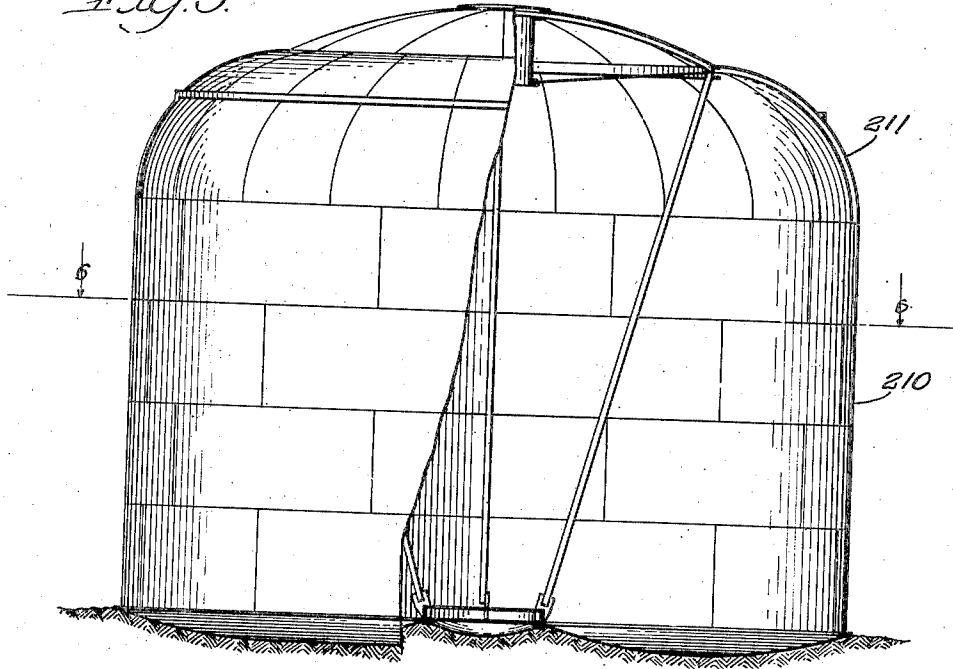


Fig. 6.

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UNITED STATES PATENT OFFICE

2,237,308

CONTAINER

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Application February 17, 1939, Serial No. 256,987

1 Claim. (Cl. 220-1)

This invention relates to improvements in containers and more especially a sheet metal container particularly adapted for holding fluids under pressure, such as liquids, gases, and liquids with gas above. The container is especially adapted for holding liquids under pressure, for example, volatile liquids like gasoline and light oils where evaporation causes an internal gas pressure. By holding such pressure up to a certain point, evaporation may be lessened or eliminated.

In general my improved container comprises a cylindrical shell closed at the top and bottom by circular noded end members. In other words, the ends are generally curved or bulged (preferably outwardly) but provided with node circles.

Another feature of my invention is the provision of columns connecting the node circles of the top and bottom, such columns serving both as compression and tension members.

Another feature of the invention is the making of the node circle in the top with a larger diameter than that in the bottom so that the columns connecting the node circles will be inclined upwardly and outwardly. Preferably, the upper node circle lies substantially above the low point of the outer trough in the bottom.

By this construction the noded roof is self draining, the bottom is relatively shallow and the structure is relatively stable under gas pressure alone. This construction also imposes substantially horizontal radial stresses on the plates where the columns are connected so as to lessen or eliminate any tendency for the outer portion of the shell to rise when the container is subjected to internal pressure.

Other features and advantages will appear more fully as I proceed with my specification.

In those forms of devices embodying the features of my invention shown in the accompanying drawings—Fig. 1 is a view in side elevation partly in section; Fig. 2 is a top plan view of the same partly in section; Fig. 3 is a view similar to Fig. 1 showing a modification; Fig. 4 is a top plan view of the same partly in section; Fig. 5 is a view similar to Fig. 1, showing another modification; and Fig. 6 is a view taken as indicated by the line 6 of Fig. 5.

The container shown in Figs. 1 and 2 includes a vertical cylindrical sheet metal shell 10 closed by the top and bottom circular noded end members 11 and 12 respectively. As shown, the top is generally curved or bulged outwardly, having a central dome portion 11d surrounded by the

node circle 11a. Likewise the bottom 12 is generally curved or bulged outwardly and provided with the central portion 12d surrounded by the node circle 12a. The node circle 11a is somewhat larger in diameter than the node circle 12a so that the circle 11a lies substantially above the low point 12b in the trough of the bottom lying outside of the node circle 12a.

15 15 indicates a circular girder attached to the top under the node circle 11a and 16 indicates a similar girder on the bottom above the node circle 12a. The girders 15 and 16 are connected by upwardly and outwardly inclined braces 17 serving both as tension and compression members.

The top is preferably formed so that there is no trough or depression above the node circle 11a. That is, the outer portion 11b of the roof extends outwardly from the node circle 11a substantially horizontally and then curves downwardly to its periphery 11c. By this construction the roof is self draining.

20 20 indicates an angle iron attached to the upper edge of the shell 10 for bracing purposes and the lower edge is provided with a similar angle iron brace 21.

The shell 10 is preferably thicker toward the bottom as indicated by 10a, than at the top as indicated by 10b. In other words, the plates from which the shell 10 is made are progressively thinner toward the top. The container is designed to hold liquid and consequently the pressure at the bottom will be somewhat greater than the pressure at the top owing to the increased head of liquid.

The structure shown in Figs. 3 and 4 is substantially the same as that shown in Figs. 1 and 2 except that the end members have two node circles instead of one. Obviously, the top and bottom can each be noded to any degree desired. As here shown, the top, indicated in general by 111, has the central dome portion 111d surrounded by the inner node circle 111a and outside of that the outer node circle 111e. Likewise the bottom 112 has a central portion 112d surrounded by the inner and outer node circles 112a and 112e respectively. The node circle 111a lies above the low point in the trough 112b and likewise the node circle 111e lies above the low point of the trough 112f.

115 indicates a circular girder under the node circle 111a, and 215 indicates a similar girder under the node circle 111e. Likewise, on the bottom there is a circular girder 116 above the

node circle 112a and a circular girder 216 above the node circle 112e.

117 indicates upwardly and outwardly slanting braces connecting the girders 115 and 116; and likewise 217 indicates similar braces connecting the girders 215 and 216.

110 indicates the vertical cylindrical shell connecting the top and bottom members.

The top is so curved that preferably there are no troughs or depressions at the node circles 111a and 111e so that the roofs will be self draining.

The structure shown in Figs. 5 and 6 has its roof plates 211 tangent to the vertical shell 210 at the point of connection. In other respects, this container is substantially the same as the one shown in Figs. 1 and 2.

While there are shown and described certain embodiments of the invention, it is to be under-

stood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claim, in which it is intended to claim all novelty inherent in the invention as broadly as permissible, in view of the prior art.

What I claim as new, and desire to secure by letters patent, is:

A vertical cylindrical shell closed by circular noded top and bottom members, a node circle in the top having a larger diameter than the corresponding node circle in the bottom, and upwardly and outwardly slanting braces joining a top node circle with the corresponding bottom node circle.

DONALD E. LARSON.