

July 25, 1950

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2,516,101

LIQUID SEAL FOR FLOATING ROOFS

Filed Nov. 30, 1945

Fig. 1.

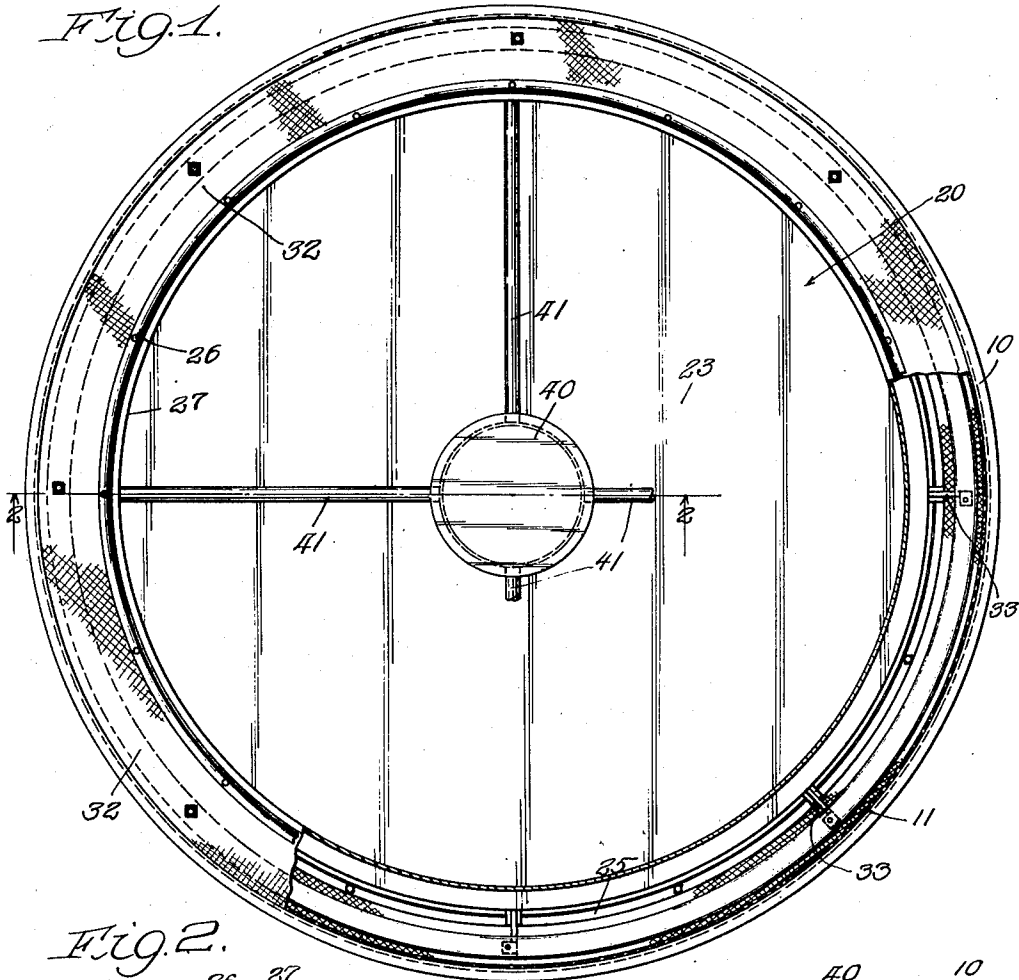
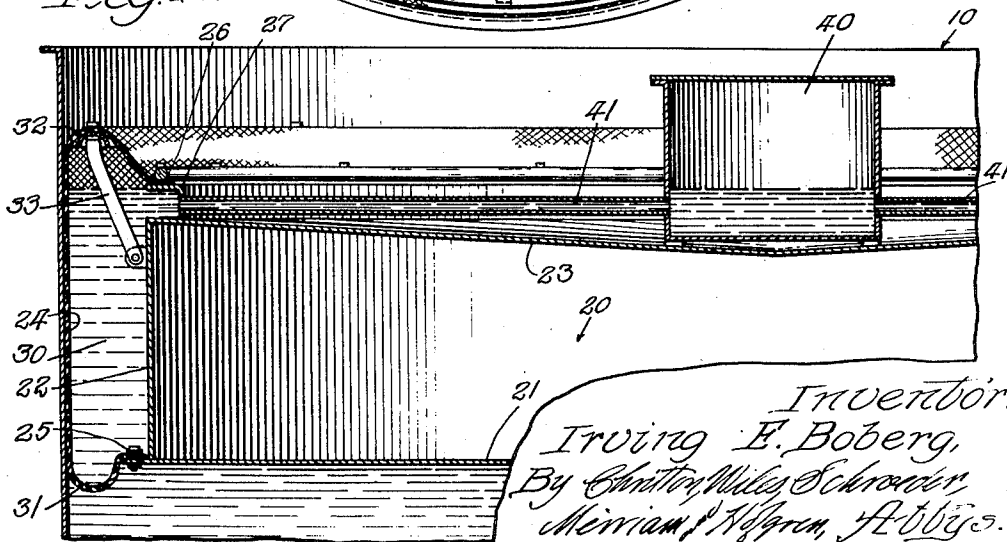


Fig. 2.



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UNITED STATES PATENT OFFICE

2,516,101

LIQUID SEAL FOR FLOATING ROOFS

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Application November 30, 1945, Serial No. 631,812

2 Claims. (CL 220-26)

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This invention relates to a liquid seal for a floating roof, and more particularly to a seal employing the same, or, substantially the same liquid as that employed in the vessel.

The invention is illustrated in the drawings in which:

Fig. 1 is a plan view partly in section of a roof; and

Fig. 2 is a fragmentary sectional elevation taken along the line 2-2 in Fig. 1.

The seal is intended for use in a liquid storage vessel 10 having side walls of sheet metal 11. The roof 20 is indicated as a pontoon type having a bottom 21, an annular upstanding rim 22, and a top 23 which slopes downwardly and inwardly to the center of the pontoon.

The seal comprises a flexible sheet of fabric material 24 which is secured at the bottom of the rim to an annular flange 25, and at the top to the horizontal arm of the angle 27. The vertical arm of the angle is secured to the top 23 and thus forms a liquid filled annular channel.

The space between the rim 22 and the fabric is partially filled by sealing liquid 30 which is preferably the same liquid as that in the storage vessel. In the case of highly volatile liquids, however, such as high test gasoline, the sealing liquid may be of slightly lower vapor pressure. It is not, however, sufficiently different to endanger pollution of the tank contents in the event of a seal break. The weight of the liquid causes the fabric to form a slight loop 31 at the bottom. The fabric is also supported in a loop 32 at the top by suitable supporting means, such as the pivoted lever 33.

Inasmuch as the distance between the rim 22 and the side wall 11 may vary considerably as the roof rises and falls, due to irregularities in tank construction, the amount of liquid required within the seal likewise varies. In order to accommodate excessive liquid and to provide liquid when more is required I maintain one or more reservoirs 40, located on the top of the roof. These reservoirs are suitably connected as by lines 41 to the liquid space within the seal. It is preferred to have a number of connections from the reservoir to the seal. The pipes for such connections have been indicated at right angles to each other. A plurality of such reservoirs may be provided, if desired, with one or more connections to each.

The liquid level within the seal is maintained above the normal displacement level of the roof,

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and the amount of liquid within the reservoir 40 is sufficient to maintain this excess head of liquid at all times, and under all conditions and positions of the roof.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom.

What I claim as new, and desire to secure by Letters Patent, is:

1. In a liquid storage tank having a floating roof, means for sealing the space between the roof and the sides of the tank comprising: an annular flexible sealing member having one edge attached to the upper portion of the roof and having the other edge attached to the lower portion of the roof to form a pocket, said member having a first intermediate portion extending upwardly from the edge to the side of the tank, a second intermediate portion extending downwardly along the sides, and a third intermediate portion extending upwardly to the other edge, a hanger in the pocket and pivotally mounted on the roof, said hanger being in engagement with the underside of the first intermediate portion to support said first intermediate portion in an outwardly convex loop of substantially U-shaped cross section, a sealing liquid partially filling the pocket, and a reservoir of sealing liquid on the roof and connected to the pocket to maintain the head of the sealing liquid in excess of the head of the liquid within the tank at all positions of the roof.

2. A storage vessel as set forth in claim 1 in which the sealing liquid is substantially the same as the liquid within the storage vessel.

IRVING E. BOBERG.

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