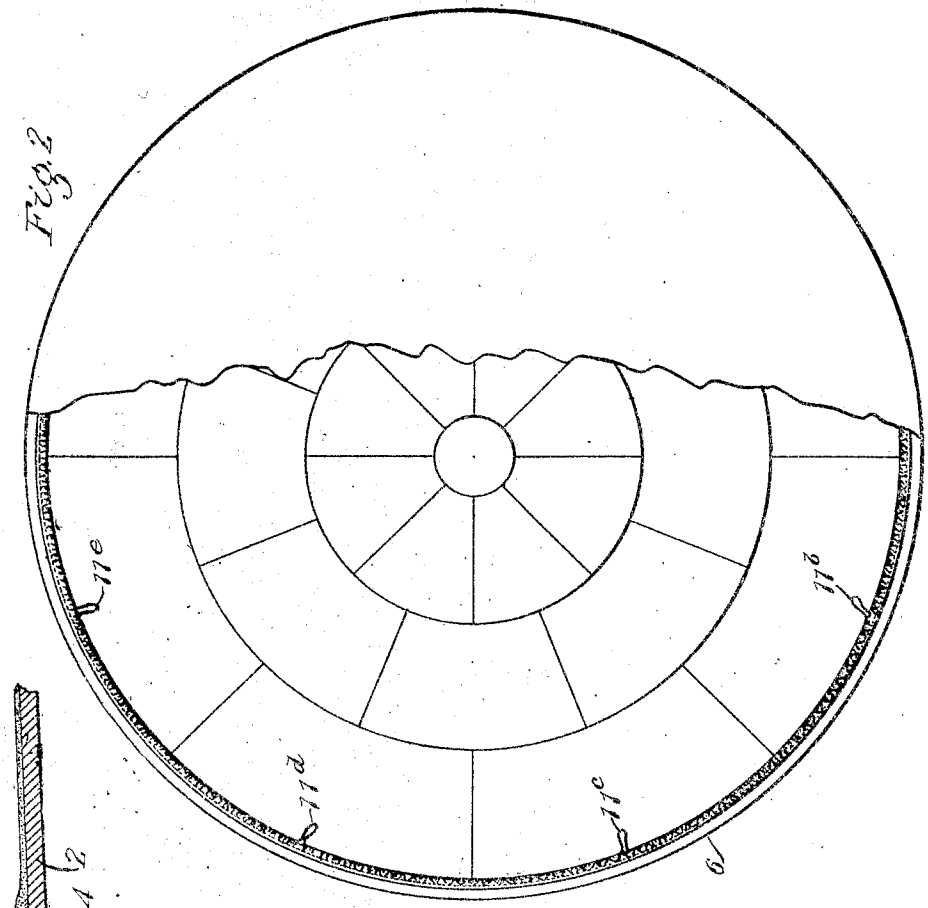
Sept. 7, 1926. 1,599,110

L. A. BALDWIN

VAPOR SEAL FOR TANKS AND METHOD OF MAKING THE SAME

Filed July 15, 1925

Fig. 2



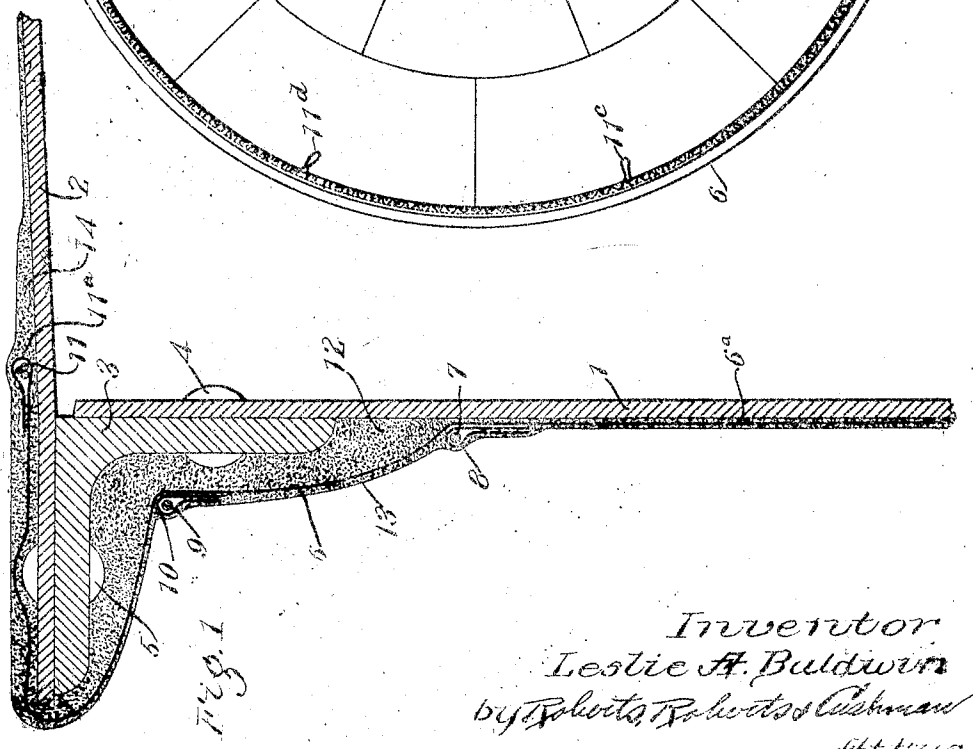


Fig. 1

Inventor
Leslie A. Baldwin
by Roberts, Roberts & Cushman
Att'ys.

Patented Sept. 7, 1926. 1,599,110

UNITED STATES PATENT OFFICE.

LESLIE A. BALDWIN, OF UNIVERSITY CITY, MISSOURI, ASSIGNOR TO JOHNS-MANVILLE, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

VAPOR SEAL FOR TANKS AND METHOD OF MAKING THE SAME.

Application filed July 15, 1925. Serial No. 43,755.

My invention relates to the sealing of tanks, such as are used for storage of petroleum, against the escape and waste of volatile, and often valuable, constituents of the normal contents of the tank, and is particularly addressed to sealing the eaves of such tanks, where the line of juncture of the tank side and top is liable to develop points of leakage.

By way of illustration, the invention will be described in its application to a steel plate cylindrical petroleum tank having a steel plate top riveted at the periphery to the eaves-angle. In the drawings hereto annexed, Fig. 1 represents, in vertical section, a portion of such a tank at and near the eaves, with the vapor seal attached; and Fig. 2, a plan view of a portion of the tank (on a relatively small scale).

The principle of construction and operation of the vapor-seal lies in the provision of a substantially thick or voluminous mass of vapor-proof cementitious material enveloping all the seams and joints at and near the eaves of the tank and held in place by a container attached to the tank and surrounding the eaves; a mass of sealing material which, unlike coatings brushed or mopped on to the surfaces and into the seams of the tank structure, is not dependent for support on surface-adhesion and therefore not subject to local fracture by reason of expansion and contraction of the tank side and top. The vapor seal illustrated in Fig. 1 is the form which I prefer, for reasons of economy both of material and labor of installation.

A strip of canvas 6 is first prepared, long enough to gird the entire periphery of the tank at the eaves, and to form a lap, and wide enough to extend from a line several inches below the tank eaves, over the edge of the tank top, and several inches above the tank top. Securing cables 7 and 9, preferably of steel wire, are run through canvas tubes or pockets 8 and 10 respectively, these tubes being stitched to the strip 6 along its entire length. The upper edge of the strip 6 is turned back and stitched to form a tube 11^a through which a clewline 11 (preferably of manila rope) is run. At intervals apertures in this tube 11^a are provided so that the clewline 11 may be drawn out in loops, such as 11^b, 11^c, 11^d, 11^e (Fig. 2) in order to clew the upper edge of the strip 6 inwardly over the tank roof.

In applying the seal to the eaves of the tank, the metal of the tank side 1 is first cleaned over a zone extending a few inches below the eaves-angles 3, and a layer of vapor-proof cement then mopped over this cleaned zone. The cement which I recommend for this purpose is a composition of the character long used to make printers' inking rolls, namely, of glue and glycerine, or glue and molasses, to which sundry gums or varnishes may be added. This composition becomes quite fluid at temperatures below the boiling point of water, is highly adhesive, and has the merit of possessing elasticity at all ordinary atmospheric temperatures, a quality which adapts it well to the service of sealing the seams of an oil tank. The lower portion 6^a of the canvas strip 6 is laid upon the cemented zone of the tank side, and the cable 7 drawn tight and secured, as by a turnbuckle. Then the upper edge of the strip 6 is folded upward and inward over the eaves of the tank top, and clewed by means of a clewline 11, as indicated in Fig. 2. It will be found advantageous to lay a preparatory or priming coat of vapor-proof cement on the tank top, from the edge inward, allowing this coat to set before the strip 6 is clewed into place.

The strip 6, in place as described, forms a flexible annular mold entirely around the edge of the tank-top 2, and is ready to receive its contents of vapor-proof cement. At any point, a suitable funnel is inserted under the closed edge of the strip 6, and fluid vapor-proof cement poured in so as to flow down into the bag-like mold provided by the strip 6. As the lower part of the space between the strip 6 and the tank side 1 fills, the cable 9 is drawn, so as to diminish the volume of cement required to fill the mold space. The funnel through which the cement is poured is moved around the circumference of the tank-top until the first stage of charging the mold space is concluded. The rate of pouring should be such that, when the cable 9 is drawn and secured, the level of vapor-proof cement shall be not far from the level to which the cable has been drawn.

Then the second stage of cement pouring is begun, and the mold space entirely filled.

Preferably an excess of vapor-proof cement will be poured during or just after this second stage of mold-filling, so that there shall be an abundance of cement between the canvas strip 6 and the tank-top 2.

The vapor-proof cement, thus poured into the mold space between the strip 6 and the tank structure, forms an annular sealing ring 12, which covers all the joints between the side and top plates, and also the rivets 4 and 5. For additional sealing, as well as for protection of the canvas strip 6, a heavy coat 13 of vapor-proof cement is mopped on to the outside of the canvas, extending over the closed edge thereof, and joining the cover-coat 14, of similar material.

It will be observed that the form or mold, is secured to the tank side by means of girths which involve no perforations in the tank plates, (as would be required if rivets or screws were employed).

I claim:

1. A vapor seal for oil tanks and the like, comprising a mold-annulus of flexible material extending around and spaced from the eaves and over the edge of the tank-top, a flexible girth securing the annulus to the tank side, a second flexible girth contracting the annulus into the eaves-angle of the tank, a clewline in the upper edge of the annulus and accessible at a plurality of intervals in its periphery and a belt of vapor-proof cement filling the space between said annulus and the roof and side of the tank structure.

2. A vapor seal for oil tanks and the like, comprising a mold-annulus of flexible material extending around and spaced from the eaves and over the edge of the tank-top, a flexible girth securing the annulus to the tank side, a second flexible girth contracting the annulus into the eaves-angle of the tank, a clewline in the upper edge of the annulus and accessible at a plurality of intervals in its periphery and a belt of elastic vapor-proof cement filling the space between said annulus and the roof and side of the tank structure.

Signed by me at St. Louis, Missouri this eighth day of May 1925.

LESLIE A. BALDWIN.