

Jan. 7, 1936.

J. VERNER

2,026,762

INSULATED SELF BUOYANT FLOATING ROOF FOR TANKS

Filed Oct. 23, 1929

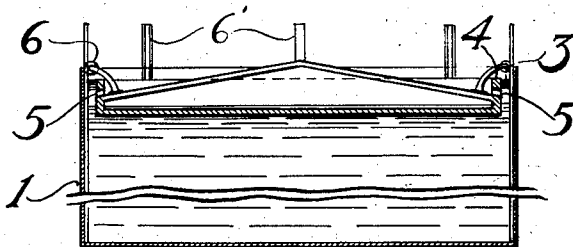
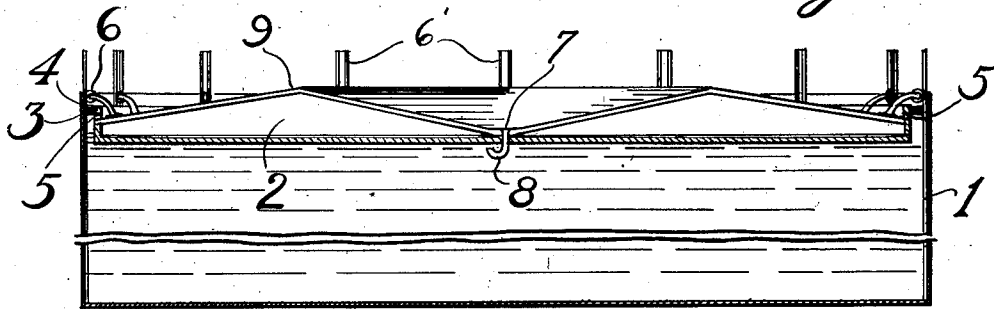
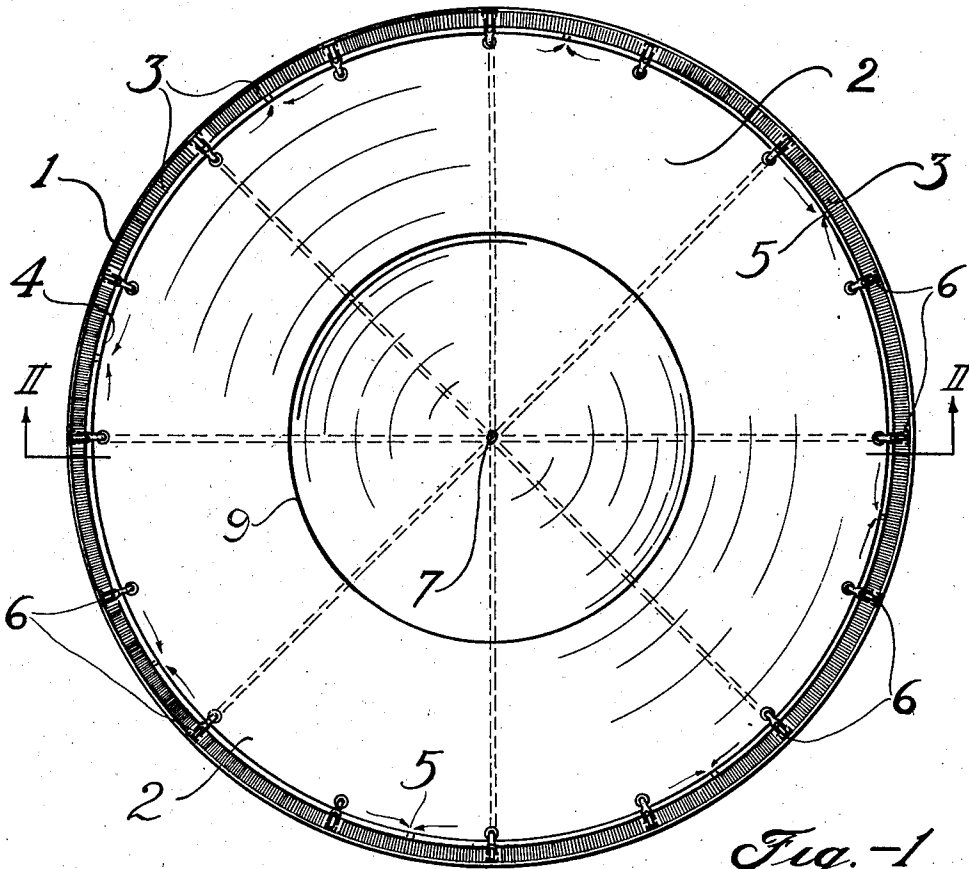


Fig. -2

Fig. -3

INVENTOR
JULES VERNER
BY
W. H. H. H.
ATTORNEY

UNITED STATES PATENT OFFICE

2,026,762

INSULATED SELF-BUOYANT FLOATING
ROOF FOR TANKSJules Verner, Linden, N. J., assignor to Standard
Oil Development Company, a corporation of
Delaware

Application October 23, 1929, Serial No. 401,735

6 Claims. (Cl. 220-26)

This invention relates to floating roofs or decks for oil tanks or other receptacles, the primary object being to provide a self-buoyant floating roof or deck in the form of a raft which will lie upon the surface of the liquid, with improved means of closing off communication between the atmosphere and the oil and thereby preventing evaporation losses.

Other objects will be apparent from the specification and from the accompanying drawing in which Fig. 1 is a top plan view of a floating roof constructed in accordance with the invention and disposed in a tank. Fig. 2 is a sectional view taken along the line II-II of Fig. 1 and Fig. 3 is a sectional view similar to Fig. 2 of a modified form of roof particularly adapted for use in small tanks.

Referring particularly to Figs. 1 and 2 of the drawing, the device is illustrated as positioned in a tank 1 of cylindrical form. The tank may or may not be provided with a suitable roof. The tank is adapted to contain oil or other liquid which it is desired to protect.

A deck is provided which is adapted to be positioned within the tank upon the surface of the liquid contained therein. The deck comprises a disc-shaped flat bottom body portion of generally circular contour, the top of which is suitably pitched for drainage. The body portion of the deck comprises a float 2 of self-buoyant material. The body portion can be constructed of cork, or cork composition, wood or any other material which will float on the liquid. It is preferred that the material be heat insulating. When material is used that is porous or liquid absorbent, it is coated or impregnated with a suitable material to render the same impervious to the liquid. For example, the body portion can be treated with shellac, lacquers or varnishes of the cellulose base type or combinations thereof, thereby rendering the same oil proof and water proof.

Sealing means are provided for sealing the space between the body portion and the side walls of the tank. The sealing means comprises a plurality of close set layers of filaments or hairs of flexible material forming continuous brushes or brush-like members 3 encircling the float 2 with a continuous ring. The brushes can be made of hair, fiber, metal or alloy filaments or the like. One of the ends of the filaments or hairs of the brushes are clamped to and supported by a flange 4 attached to the deck and project laterally and radially therefrom substantially parallel with the plane of the float 2. The layers

of filaments or hairs of the brushes are so closely set in flange 4 that they will substantially retard the passage of vapors. The brushes are carried above the surface of the liquid upon which the deck floats. The filaments or hairs of the brushes are sufficiently long to over-lap the space between the body portion and the side walls of the tank. The flange 4 is provided with one or more openings 5 the function of which will be later described. Rollers 6 attached to the roof are adapted to ride on guides 6' on the shell of the tank and guide the roof whereby the roof is maintained in a concentric position in large tank-age.

In order to insure drainage of liquid, such as rain water, from the deck, the latter is provided with an opening 7 communicating with a trap seal 8. The upper surface of the deck 2 is inclined downwardly in opposite directions from a ridge 9 intermediate the outer edge of the deck and the opening 7. As a consequence liquid falling upon the deck will drain through the openings 5 and 7 into the body of oil in the tank. In the alternative form of the device illustrated in Fig. 3, the upper surface of the deck is inclined from a central position 10 toward the outer edge of the deck. This construction is particularly adapted for use in small tanks.

In utilizing the device the deck is mounted in the tank and oil or other liquid is introduced into the tank. The deck floats upon the surface of the liquid and rises and falls therewith. It is self-buoyant and therefore not subject to danger of sinking, as in the case of leaky metallic decks.

The material of the deck being relatively heat insulating, maintains the surface of the oil comparatively cool and thereby prevents the boiling or volatilization of the oil with consequent loss of volatile constituents due to the sun's heat. The brushes maintain a close seal around the edges of the deck which substantially prevents the escape of oil vapors. When liquid is withdrawn from the tank, the brushes wipe against the surfaces of the side walls of the tank and brush the liquid thereon downwardly, thereby reducing the loss of the liquid by volatilization from the side walls of the tank.

While a preferred embodiment of the invention has been shown and described, it will be understood that various modifications can be made therein within the scope of the invention, and such modifications are intended to be covered by the appended claims.

I claim:

1. A floating deck seal for tanks comprising a

plurality of individually bendable bristle-like members extending outwardly from the edge of the deck in close relation one to the other and forming a continuous ring.

- 5 2. A floating deck seal for tanks comprising a plurality of individually bendable bristle-like members extending radially outward from the edge of the deck in close relation one to the other and in spaced relation to the base of the deck.
- 10 3. A floating deck seal for tanks comprising brushes formed of a plurality of closely associated individually bendable bristle-like members of a compact filamentous material.
- 15 4. In combination with a storage tank, a roof spaced from the tank wall and adapted to float on the liquid in the tank, a peripheral wiping element including individually bendable bristle-like members for closing the space between the

tank wall and roof, and means for securing the wiping element to the roof.

5. A floating deck seal according to claim 3 in which the compact filamentous material is selected from the class consisting of hair, fibre, 5 metal or alloy filaments.

6. A floating deck seal for tanks comprising a plurality of individually bendable bristle-like members formed of a compact filamentous material secured in close relation to one another to the 10 edge of the floating deck and in spaced relation to the base thereof, said bristle-like members having a length greater than the space between the deck and the wall of the tank whereby the vertical movements of the deck causes a wiping 15 action of the bristle-like members with relation to the tank wall.

JULES VERNER.