

June 19, 1928.

C. A. GLASS

1,674,039

SECTIONAL FLOATING DECK FOR OIL TANKS.

Filed July 5, 1924

Fig. 1.

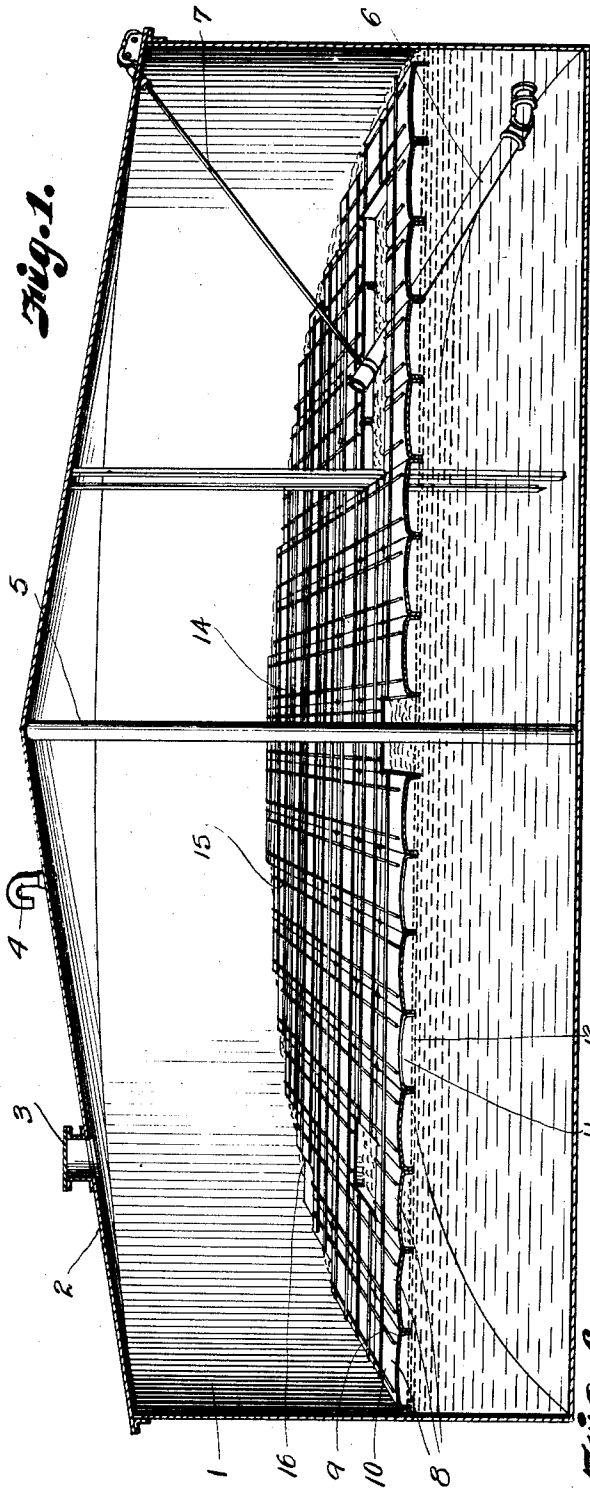


Fig. 3.

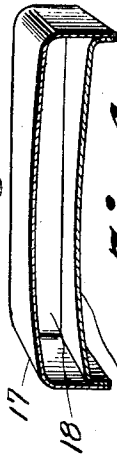


Fig. 4.

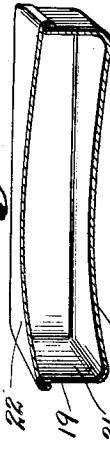


Fig. 5.

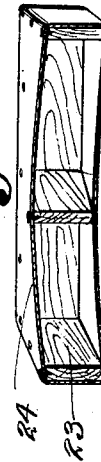


Fig. 2.

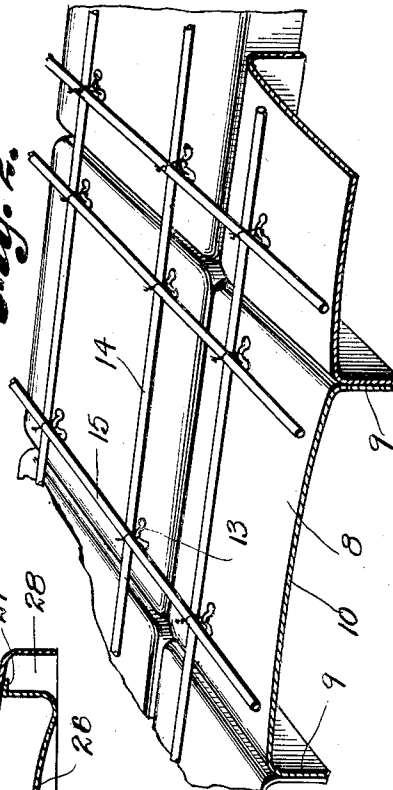
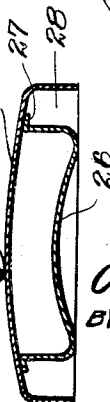


Fig. 6.



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UNITED STATES PATENT OFFICE.

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SECTIONAL FLOATING DECK FOR OIL TANKS.

Application filed July 5, 1924. Serial No. 724,214.

This invention relates to floating roofs or decks for oil tanks, the primary object being to provide a sectional floating roof or deck in the form of relatively small rafts which may or may not be tied together to provide a covering substantially co-extensive with the cross sectional area of the tank and which will lie upon the surface of the oil so as to close off communication between atmosphere and the oil and thereby prevent evaporation losses.

Prior to my invention, means has been provided for preventing the lighter volatile ends of the petroleum to be taken up by the air admitted through the breather pipe in the roof or the air which leaks through the roof. While prior devices solve the problem they are unwieldy and costly. Difficulty is experienced in shipping the deck mechanism to the fields and erecting it. My invention reduces the erection difficulties and facilitates the shipping, since the miniature raft sections may be standardized as to shape and size and shipped into the field in bundles or crates and by making the raft sections of uniform size and uniform shapes they can be placed in the tank without necessity of matching the sections and if desired they can be tied together by unskilled labor so that when in place, they will constitute a substantially rigid raft, whereas with all devices with which I am acquainted, considerable difficulty is encountered in erecting the rafts and in at least some instances skilled labor is required to effect proper installation.

The novel construction of my invention will be understood by reference to the following description in connection with the accompanying drawings, in which

Fig. 1 is a sectional perspective view of a tank to which my invention is applied.

Fig. 2 is a fragmentary perspective view showing a plurality of raft sections tied together.

Fig. 3 is a perspective sectional view of a slightly modified form of raft section.

Fig. 4 is a like view of a further modified form.

Fig. 5 is a similar view of a further modified form, and

Fig. 6 is a sectional view through a still modified form of raft section.

The tank 1 is illustrated as conforming to the conventional type of oil tanks. It is shown as provided with a roof 2, a gauge

hole 3, a breather pipe 4, a central roof pole 5, a swing pipe 6 and a cable 7 to operate the swing pipe. All this construction is old.

The preferred form of the raft section is illustrated in Fig. 2 as comprising an inverted pan 8, having a continuous flange 9 depending from the perimeter of the top 10, the flanges being submergible in the oil so as to trap air or gaseous vapor in the space 11 between the surface 12 of the oil and the top 10 of the pan so that the top of the pan is slightly above the surface of the oil. The pans are preferably rectangular and they may be provided with tying members 13 near their respective corners to tie the pans to the rods 14 and 15 which are arranged to form a frame constituting a substantially rectangular parallelogram, so as to connect the sections together to form a substantially unitary structure. Of course sections may be omitted for the pole 5 and to provide a space for the swing pipe 6, and below the gauge hatch for sampling the oil.

Since the sections are substantially rectangular, it is obvious that there will be small segmental spaces 16 about the periphery of the raft. These combined spaces will constitute a relatively small per cent of the total area of the raft so while there may be some slight evaporation losses, they will not be appreciable, but it is obvious that for these spaces I may arrange special raft sections to cover the spaces but it is believed that ordinarily these will not be necessary.

It will be apparent that the pans may be inexpensively formed of sheet metal of appropriate gauge in a very inexpensive manner and that the sections may be nested for shipping so that they will occupy a relatively small space. I prefer to slightly curve the tops 10 to increase the spaces 11 over what they would be if the tops were parallel with the surface of the oil, but I do not wish to be limited to this particular structure.

In Fig. 3 I have shown a slightly modified form of raft section or unit in which the inverted pan 17 conforms generically to the construction shown in Fig. 2 except that it has a lower parallel wall or bottom 17' to provide an enclosed space 18 so that the unit will be buoyant under all conditions.

In Fig. 4 I have shown a further modified form in which the units 19 conforms generically to the construction shown in Fig. 2 except that it is inverted and that the wall

20 is inverted as compared with the wall 10. The upturned flanges 21 in the form shown in Fig. 4 are provided with a cover 22.

In Fig. 5 I have shown a further modified form in which a substantially rectangular frame 23 is provided of wood or similar material with fabric covering 24.

In Fig. 6 the construction is shown as conforming generically to the form shown in Fig. 2, that is the member 25 is substantially like the member 18 with an inverted pan 26 fastened thereto at 27 and of smaller cross section so as to provide a space 28. In all of the forms however there is a curved wall above the oil level to provide a vapor space and by vapor I comprehend either air or hydrocarbon gas.

It will be apparent from the foregoing that the sections or units may be completed at the plant or factory and shipped in crates or bundles into the field where they can be conveniently set up without the employment of special tools or the necessity of skilled labor.

It is also an important feature of my invention that the dead air spaces in the hollow pans and the vapor spaces 11 have considerable value as heat insulators so that the surface of the oil will be at a lower temperature under the pans than where floating decks are used in which the flat portion of the deck rests upon the oil.

What I claim and desire to secure by Letters-Patent is:—

1. In a floating deck for oil tanks, a plurality of hollow units arranged edge to edge, intersecting tie rods across the tops of the units, and tie members securing the units to the rods.

2. In a floating deck for oil tanks, a plu-

rality of hollow units arranged edge to edge, intersecting tie rods across the tops of the units, and tie members flexibly securing the units to the rods.

3. A sectional deck for tanks, comprising a plurality of units arranged edge to edge, and tie rods above the units, the tie rods consisting of two sets of parallel rods, one set of parallel rods intersecting the other, each rod extending over a plurality of the units.

4. A sectional deck for tanks, comprising a plurality of units arranged edge to edge, and tie rods above the units, the tie rods consisting of two sets of parallel rods, one set of parallel rods intersecting the other, each rod extending over a plurality of the units, there being a space between certain of the units to provide an opening for a swing pipe.

5. A floating deck member for oil tanks, comprising a sheet having a downturned flange and a complementary member comprising a sheet having an upturned flange secured to the under side of the first named sheet and having its upturned flange in spaced relation with the flange of the first named sheet.

6. In a floating deck for oil tanks, an open framework comprising intersecting elongated members secured together and a plurality of floating units engaging said framework to comprise a unit.

7. In a floating deck for oil tanks, an open framework, a plurality of floating units engaging said framework, and means for securing the members of said framework together and said units to said framework to constitute a unit.

In testimony whereof I affix my signature.

CLIFTON A. GLASS.