Jan. 29, 1952 R. H. POGUE 2,583,592

JOINTED LADDER FOR FLOATING ROOFS

Filed March 26, 1947

Fig. 1.

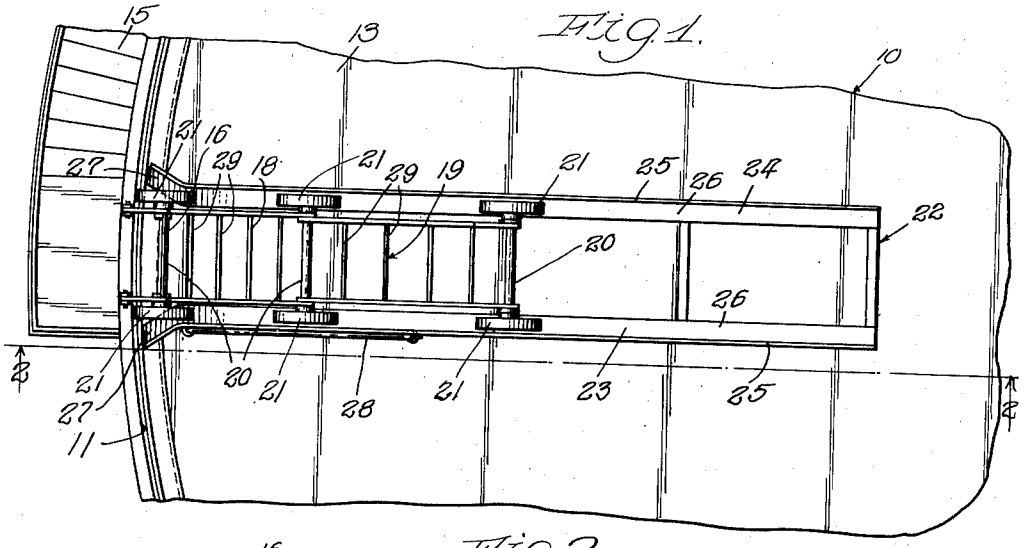
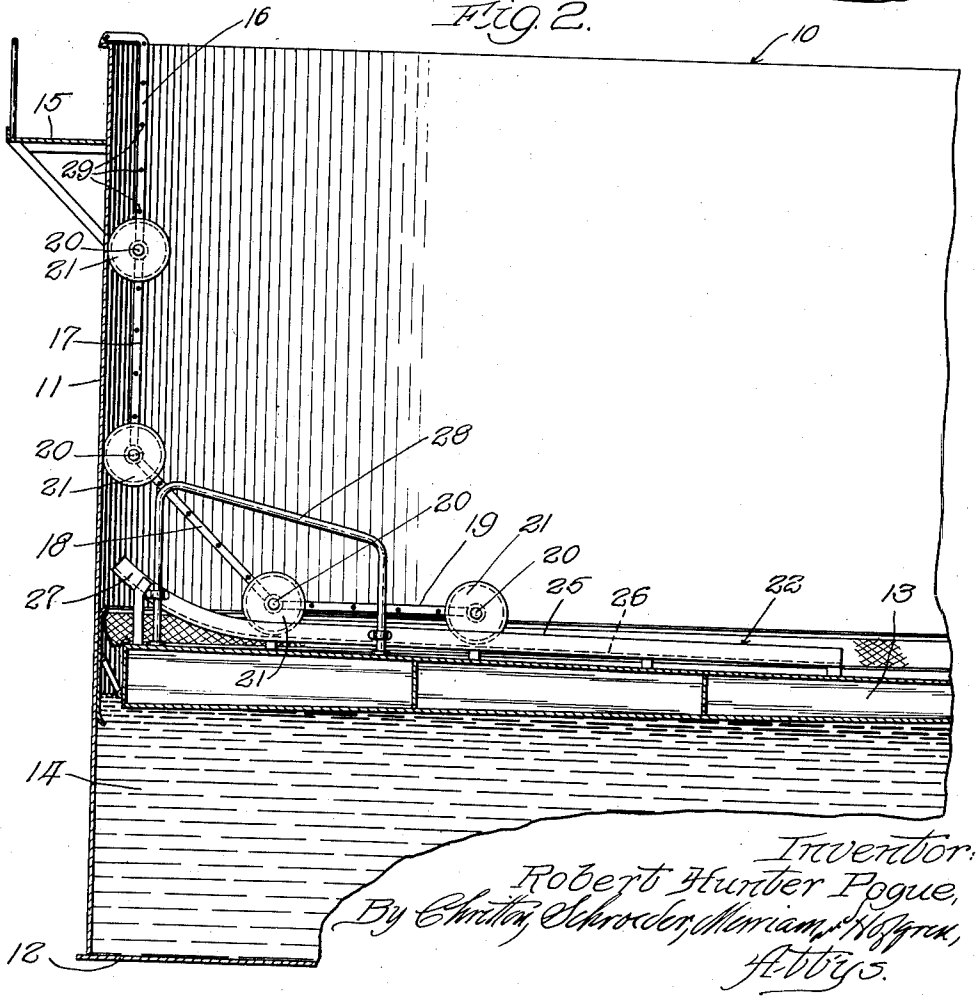


Fig. 2.



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JOINTED LADDER FOR FLOATING ROOFS

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4 Claims. (Cl. 228—1)

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This invention relates to floating roof tanks, and more particularly to means of descent from the top of such a tank to the roof, and vice versa.

Liquid storage tanks having floating roofs adapted to float on the surface of the liquid contained therein are common structures. Inasmuch as the roof is apt to be floating anywhere between the bottom-most and top-most positions in the tank, depending upon the amount of liquid stored therein, difficulty has been experienced in providing suitable and adequate means of descent to the top of the floating roof. One solution of this difficulty has been to provide a ladder hingedly connected to the upper part of the tank and resting on rollers on the roof. Such ladders, however, necessitate the workman or other person desiring to descend to the top of the roof to traverse the entire length of the ladder before stepping on to the roof. This entails a great waste of effort as the floating roof is often close to the upper edge of the tank. It is impossible, however, to supply a ladder running directly down the inner side walls of the tank, as such a ladder would interfere with the vertical movement of the roof.

I have invented, and am herein disclosing and claiming, a novel means of descent to the roof which comprises broadly a jointed ladder adapted to hang vertically from the upper edge of the tank and extend downwardly therefrom to the surface of the roof regardless of its position in the tank.

The invention will be described in conjunction with the drawings, in which:

Fig. 1 is a top view of a portion of a floating roof tank showing my novel ladder; and

Fig. 2 is a vertical section through the device shown in Fig. 1.

Referring now to the drawings, 10 indicates a liquid storage tank having a side wall 11, a bottom 12 and a floating roof 13 adapted to float on the surface of the liquid 14 contained in the tank. A spiral stairway 15 permits ascent from the ground to the upper edge of the tank. Suspended from the upper edge of the tank are a plurality of ladder sections 16, 17, 18 and 19. With the roof in the position shown in Fig. 2, the sections 16 and 17 hang vertically from the top of the tank, with section 19 resting substantially horizontally on the top of the roof and the intermediate section 18 inclined at an angle. The various sections just described, may assume these positions by means of their being hingedly connected together by means of the crossbars 20

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provided at the end of each section. The crossbars 20 also act as axles upon which the pairs of wheels 21 are permitted to rotate. Mounted upon the top of the floating roof is a guideway 22 comprising two parallel angles 23 and 24 having upstanding legs 25 between which the wheels are adapted to roll on the horizontal legs 26. The outer end of the guideway 22, that is, the end nearest the side wall of the tank, is inclined upwardly and the upstanding legs flared laterally, as shown at 27, to align the wheels with the tracks as the roof ascends. The upwardly curved outer end of a guideway is preferably made in the form of an arc of 45°. The center of curvature for this arc of 45° is determined by whatever length of the ladder sections is chosen. Attached to the roof adjacent the outer end of the guideway is a hand rail 28 which extends only a portion of the distance toward the center of the roof. A workman descending the ladder may grasp the rungs 29 thereof to steady himself during the period of vertical descent, and may grasp the hand rail 28 during the period of oblique descent until he reaches the horizontal portion 19 of the ladder. At that point, he is close to the floating roof and may step off to one side without the necessity of walking the entire extent of the ladder. While in the embodiment shown, the ladder comprises four sections, it is clear that a greater or fewer number may be used. It is also clear that as the roof rises, the sections 18 and 17 will roll horizontally across the guideway as they are picked up by the roof until only sections 16 remain vertical. Further upward movement of the roof will then cause the wheels attached to the section 16 to engage the guideway tending to level that section until the roof reaches its highest position. The various ladder sections may be prefabricated in short sections and assembled in the field, and may be standardized for all sizes of floating roofs, effecting a considerable saving and expense.

While I have shown and described my invention in its preferred embodiment, it is to be understood 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 claims.

I claim:

1. In a liquid storage tank having a floating roof, means of descent from the top of the tank to the roof comprising: a plurality of ladder sections hingedly connected together, a guideway on the roof extending inwardly and downwardly

from adjacent the tank wall, one end of said ladder being attached to the top of the tank with a portion of the ladder depending from the point of attachment and the remainder resting on said guideway, and each of said sections being provided with means adapted to engage and move sections of the ladder over the guideway as the roof rises and falls.

2. In a liquid storage tank having a floating roof, ladder means adapted to change its effective traversable length with rise and fall of the roof, comprising: a plurality of ladder sections hingedly connected together to form a continuous ladder, said ladder having one end attached to the top of the tank with the remainder of the ladder depending therefrom, rolling means mounted on the ladder and a guideway on the roof extending generally normal to the depending ladder and having an inwardly and downwardly curved outer end portion adjacent the tank wall positioned to intercept said rolling means and guide successive sections onto the guideway as the floating roof rises whereby descent to the roof may be made by traversing the depending sections of the ladder.

3. Apparatus of the character described in claim 2, in which said rolling means comprises

a plurality of pairs of wheels rotatably mounted on said ladder sections at the points of connection of said sections to adjoining sections.

4. Apparatus of the character described in claim 2 in which said guideway includes a pair of rails mounted on the roof, said rails being curved upwardly at their outer end to engage the rolling means of the ladder.

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