Oct. 26, 1926. 1,604,257

S. H. BROOKS

OIL TANK

Filed March 10, 1924

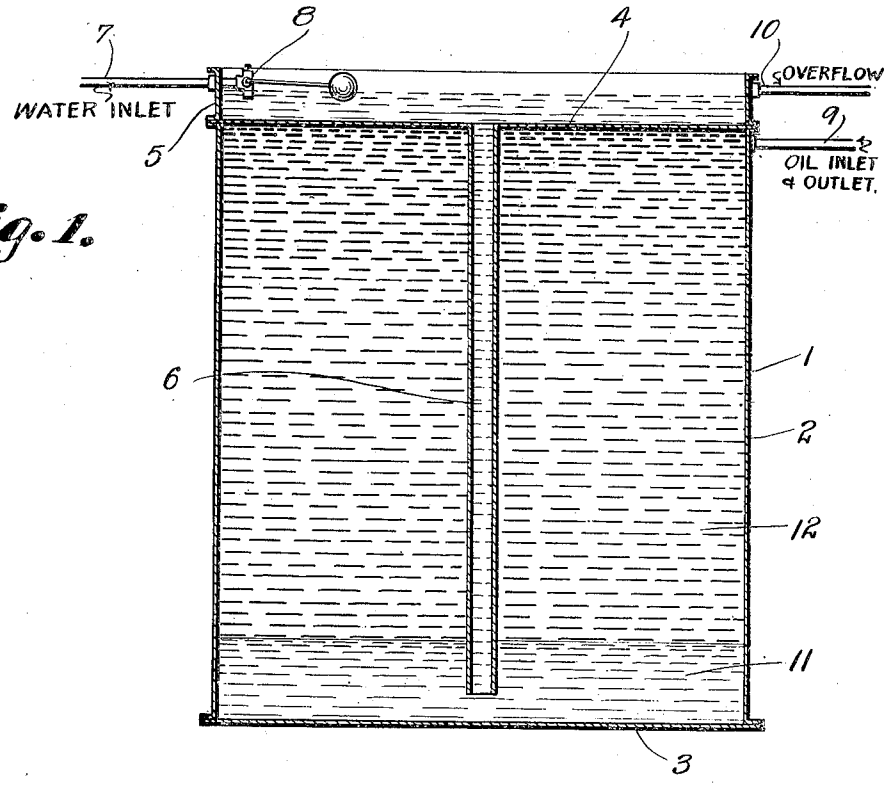


Fig. 1.

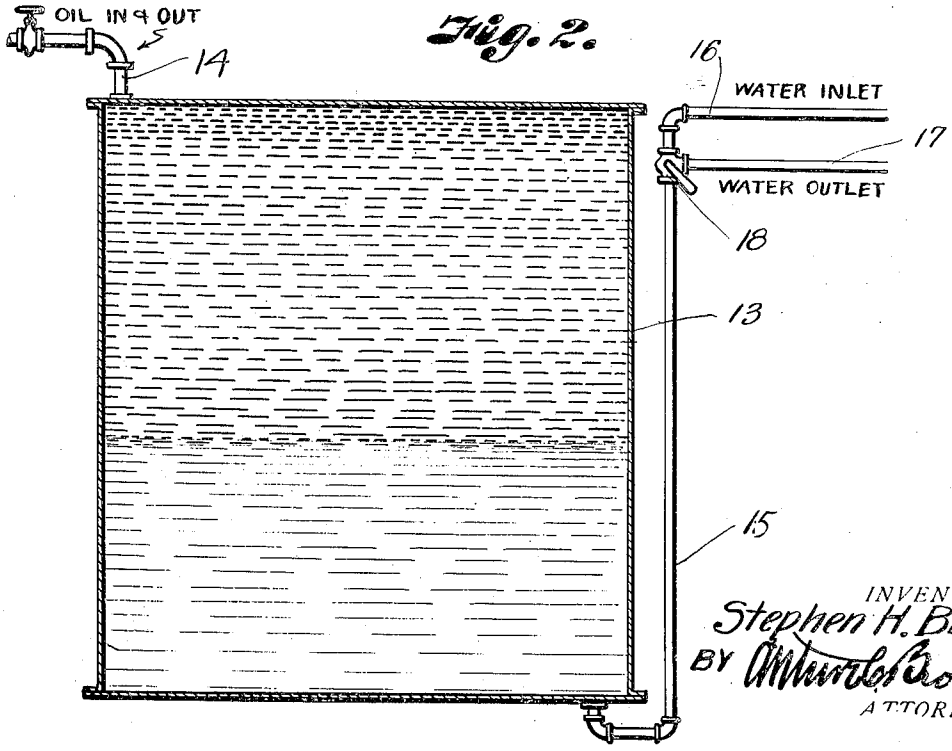


Fig. 2.

INVENTOR
Stephen H. Brooks
BY Munn & Co.
ATTORNEY

Patented Oct. 26, 1926. 1,604,257

UNITED STATES PATENT OFFICE.

STEPHEN H. BROOKS, OF CLEVELAND, OHIO, ASSIGNOR TO THE OIL CONSERVATION ENGINEERING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

OIL TANK.

Application filed March 10, 1924. Serial No. 698,125.

This invention relates to oil tanks and the primary object is to provide a gas tight oil tank so constructed that the volatile constituents of the oil will not escape to atmosphere, and the invention includes a liquid seal for the tank, the liquid seal being variable as to volume, so that it will always maintain the tank full, irrespective of the actual amount of the oil in the tank, that is the tank is so constructed that when there is a relatively small amount of oil in the tank, there will be a relatively large amount of water and when there is a relatively large amount of oil in the tank the amount of water will be relatively small and I have provided means whereby the amount of water in the tank will be automatically regulated in proportion to the amount of oil in the tank.

The novel feature of my invention will be clearly apparent by reference to the following description in connection with the accompanying drawings, in which—

Fig. 1 is a vertical, longitudinal, sectional view through a tank constructed in accordance with my invention, and

Fig. 2 is a similar view of a slightly modified form of tank.

Referring now to the drawings by numerals of reference—

1 designates a tank consisting of a vertical wall 2, a bottom 3 and a top 4. The top 4 of the tank constitutes the floor of a deck having a cylindrical channel-shaped wall 5 and extending from the top member 4 down to a point adjacent to the bottom 3 is a vertical tube 6. A water inlet pipe 7 is connected to the wall 5 and discharges into the deck and its effective port area at the discharge end is governed by a float valve 8 so that when the level of the water in the deck reaches a determined height, the supply of water will be cut off and when the level drops, the valve can unseat, after the manner of an ordinary flush tank valve.

Leading from the tank 1 near the top thereof is an oil inlet and outlet pipe 9, that is the pipe 9 serves a dual purpose, both for admitting oil and for discharging it. In the wall 5 of the deck is an over-flow pipe 10. Since oil is lighter than water, it is obvious that the oil will float upon the body of water 11 in the tank, the oil being represented at 12. The oil will be introduced into the tank 1 under pressure displacing any water that may be in the tank, but at no time is the amount of oil in the tank to be great enough to cause it to displace the water 11 below the bottom of the pipe 6. The pipe 6 therefore constitutes a liquid seal for the oil and the water in the deck not only tends to put the oil under pressure but it also is a heat absorbing medium tending to prevent the oil tank becoming too hot.

Water decks for tanks have been provided prior to my invention, but I am not aware that a water deck with a depending pipe extending nearly to the bottom of the tank has been used prior to my invention nor am I aware that the water for the deck and the liquid seal has been automatically controlled by a float valve with an overflow in the deck to allow water to overflow therefrom when it is displaced from the tank, due to an increased volume of oil introduced into the tank, and further I am not aware that prior to my invention, has it been contemplated to maintain the oil under a hydraulic pressure by introducing in effect, a water piston in the tank to cause the oil to completely fill the upper portion of the tank and thereby exclude gaseous vapors.

In Fig. 2 I have shown a slightly modified form of the invention in which the tank 13 has an oil inlet and outlet pipe 14 at its top and a water inlet and outlet pipe 15 at the bottom. The pipe 15 has two branches 16 and 17, the first a water inlet and the second a water outlet, and communication may be had with the pipe 15 and the branches 16 and 17 by a three-way valve 18. Therefore when it is desired to introduce oil into the tank, communication will be established between the pipe 15 and the branch 17 and when it is desired to displace the oil, communication with the pipe 15 and the branch 16 will be established by the three-way valve 18, the communication between pipe 15 and the branch 17 at this time being closed off.

From the foregoing it will be apparent that the tank will be full at all times, irrespective of the amount of oil therein, for the greater the amount of oil, the lesser the amount of water and vice versa, and attention is especially called to the fact that according to the construction shown in Fig. 1, that whenever the oil is introduced into the tank, the excess amount of water will flow up through the pipe 6 into the deck and also out through the overflow 10. Therefore the tank may be said to have a variable oil

space at the upper portion and a variable water space at the lower portion so that the tank can contain two liquids of different specific gravities and be adapted to receive these liquids in varying proportions.

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

1. A sealed oil tank having an oil inlet and outlet at its top, a water outlet and means for automatically delivering water to the tank in proportion to the amount of oil displaced therefrom, said means comprising a deck at the top of the tank forming a combined reservoir and float chamber and having a water supply pipe discharging thereinto, a float valve for controlling the effective port area of the pipe and a pipe leading from the bottom of the deck to a point immediately above the bottom of the tank.

2. A tank having a body portion, a horizontal wall dividing said tank into an upper and a lower chamber, an oil inlet and outlet pipe in the top of said lower chamber, a water inlet leading to said upper chamber, a float controlled valve for said water inlet and a conduit leading from said upper chamber through said wall to a point adjacent the bottom of said lower chamber.

3. A tank having a body portion, a horizontal wall dividing said tank into an upper and a lower chamber, an oil inlet and outlet pipe in the top of said lower chamber, a water inlet leading to said upper chamber, a float controlled valve for said water inlet, an overflow pipe leading from near the top of said upper chamber, and a conduit leading from said upper chamber through said wall to a point adjacent the bottom of said lower chamber.

In testimony whereof I affix my signature.

STEPHEN H. BROOKS.