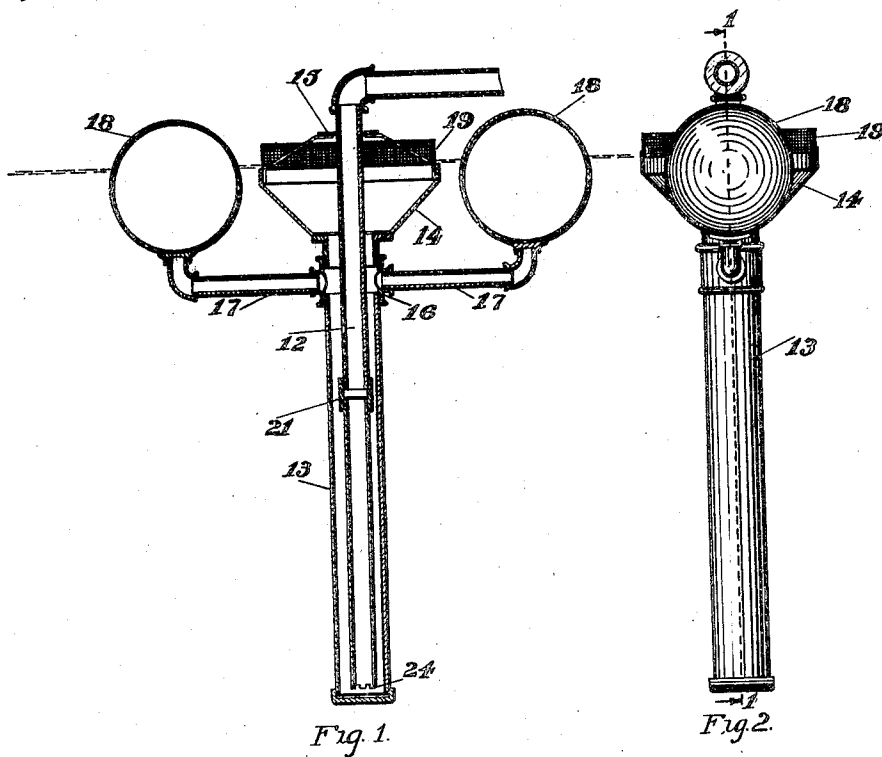
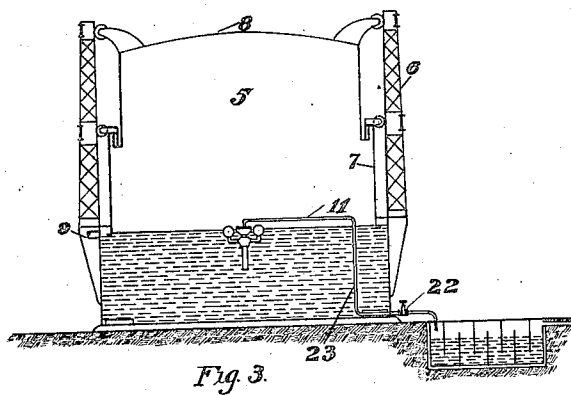


W. J. WELCH.
TANK SKIMMER.
APPLICATION FILED JUNE 6, 1912.

Patented Aug. 18, 1914.

1,107,391.



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TANK-SKIMMER.

1,107,391.

Specification of Letters Patent.

Patented Aug. 18, 1914.

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To all whom it may concern:

Be it known that I, WALTER J. WELCH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tank-Skimmers, of which the following is a specification.

This invention relates in general to skimmers adapted for the separation of two liquids of different specific gravities and, more particularly, to a device for separating the oil from the surface of the water in a gas tank.

It is well known to those familiar with the manufacture of illuminating gas that a considerable quantity of oil is introduced into the storage tank with the gas, which oil accumulates on the surface of the water in the tank. It is desirable to remove this oil for two reasons; first—because of the value of the oil itself for commercial purposes and, secondly—because it is absorbed to a greater or less degree by the gas in the tank with detrimental effect to the gas.

One of the objects of the present invention is to remove this oil from the surface of the water without wasting the water and irrespective of the height of the water in the tank.

Another object is the provision of a device which will automatically maintain itself at a predetermined height relatively to the heavier liquid so that the lighter liquid will be collected by the device and carried away for future use.

Other objects and advantages of the present invention will be apparent as the same is better understood by reference to the following description when considered in connection with the accompanying drawings illustrating one preferred embodiment thereof.

Referring to the drawings Figure 1 is a sectional view taken substantially on the line 1—1 of Fig. 2; Fig. 2 is an elevation of the skimmer shown in Fig. 1; and Fig. 3 is a sectional view through a gas tank showing my invention in operative position therein.

On the drawings, reference character 5 designates a collapsible gas storage tank of usual construction comprising the standards or frame 6 and the collapsible sections 7 and 8. Water is usually supplied to tanks of this character from any suitable source to form a water seal in the bottom of the tank

and an overflow 9 is provided to determine the height to which the water may rise in the tank.

It will be observed that the overflow pipe is located outside the section 7 and when gas under pressure accumulates in the tank the surface of the water inside the collapsible section 7 will be at a lower level than the water outside the section due to the pressure of the gas in the tank. It will be manifest, therefore, that the water level within the tank varies with the variations and pressure of the gas; consequently, a skimmer fixed at any predetermined height in the tank, such as has heretofore been employed, will not accomplish the desired result for the reason that when the water level drops below the surface of the upper edge of the skimmer the oil will not be removed and when the water level rises above the edge of the skimmer the water will be drawn off.

In order to remove the oil without removing any considerable quantity of water, I have provided a floating skimmer which will now be described: A pipe 11 is fixedly mounted within the tank in any suitable manner with one end projecting outside the tank and the other end extending horizontally above the water level, preferably to the center of the tank, and terminating in a downwardly extending portion 12. An open-top receptacle, comprising a tubular portion 13 and a funnel-shaped portion 14, is disposed over the downwardly projecting end 12 of the pipe and is adapted to slide up and down thereon, said receptacle being guided in its sliding movements by a suitable guide 15 loosely embracing the pipe. The portions 13 and 14 of the receptacle are respectively threaded into a coupling 16 to which are secured laterally projecting arms 17 equipped at their outer ends with suitable floats 18 which are adapted to maintain the upper edge of the funnel portion 14 slightly above the level of the water. The positions of the funnel-shaped portion 14 and also of the portion 13 of the receptacle may be adjusted relatively to the floats by reason of the threaded connection with the coupling 16. When the proper adjustment is made the upper edge of the receptacle will be maintained at all times approximately at the level of the water so that the oil which collects on the surface of the

water may flow into and be collected by the receptacle. A screen 19 is preferably disposed around the upper end of the receptacle to prevent pieces of cork and other solid material from dropping into the receptacle. A stop or sleeve 21 is preferably provided on the pipe 12 to limit the downward travel of the skimmer so that it will not drop off the end of the pipe in case the water level falls below a predetermined point such as might occur when the tank is drained. Other means, however, might be provided for limiting the downward movement of the skimmer if preferred.

When the device is to be used the pipe 11 is filled with water and the valve 22 outside the tank is then closed. The skimmer will rise and fall with variations in water level in the tank so as to maintain its upper edge approximately at the water level, as previously described, thus permitting the oil on the surface of the water to flow into the receptacle. At predetermined times the valve 22 may be opened and the oil will, thereupon, be withdrawn from the receptacle by siphonic action, since the vertical leg 23 of the pipe 11 is longer than the downwardly projecting leg 12. When the oil has been withdrawn so that water from the tank is drawn out through the pipe the valve 22 is closed, thus leaving the pipe full of water so that the next accumulation of oil may be withdrawn by simply opening the valve. The lower end of the pipe 12 is preferably notched, as indicated at 24, so that siphonic action will not be interfered with in case the bottom of the cylinder 13 is elevated into contact with the end of the pipe as might

sometimes occur when the water in the tank reaches an unusual height.

It is believed that my invention and many of its attendant advantages will be understood from the foregoing without further description and it will be obvious that various mechanical changes in the size, shape, proportion and arrangement of the various parts may be resorted to without departing from the spirit of the invention or sacrificing any of the material advantages thereof.

I claim:

A tank skimmer for separating floating oil from water in a tank, comprising a pipe closed at its lower end, a cross coupling attached to the upper end thereof, arms projecting laterally from said coupling, a float secured to the outer end of each arm, a funnel shaped receptacle attached to the upper end of said coupling, a discharge siphon having the short leg thereof projecting downwardly through said funnel shaped receptacle and said coupling into said pipe, a screen carried by the upper end of said receptacle, and guide members mounted on said funnel shaped receptacle and slidingly engaged with the leg of said siphon whereby the floats and the apparatus carried thereby are guided in their up and down movements on said siphon leg, said floats being positioned to maintain the upper edge of said funnel shaped receptacle substantially on a level with the upper surface of the water in the tank.

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Witnesses:

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