

H. M. FACKERT.
WASTE FUEL OIL SALVAGING BARGE.
APPLICATION FILED OCT. 14, 1921.

1,406,950.

Patented Feb. 14, 1922.

Fig. 1.

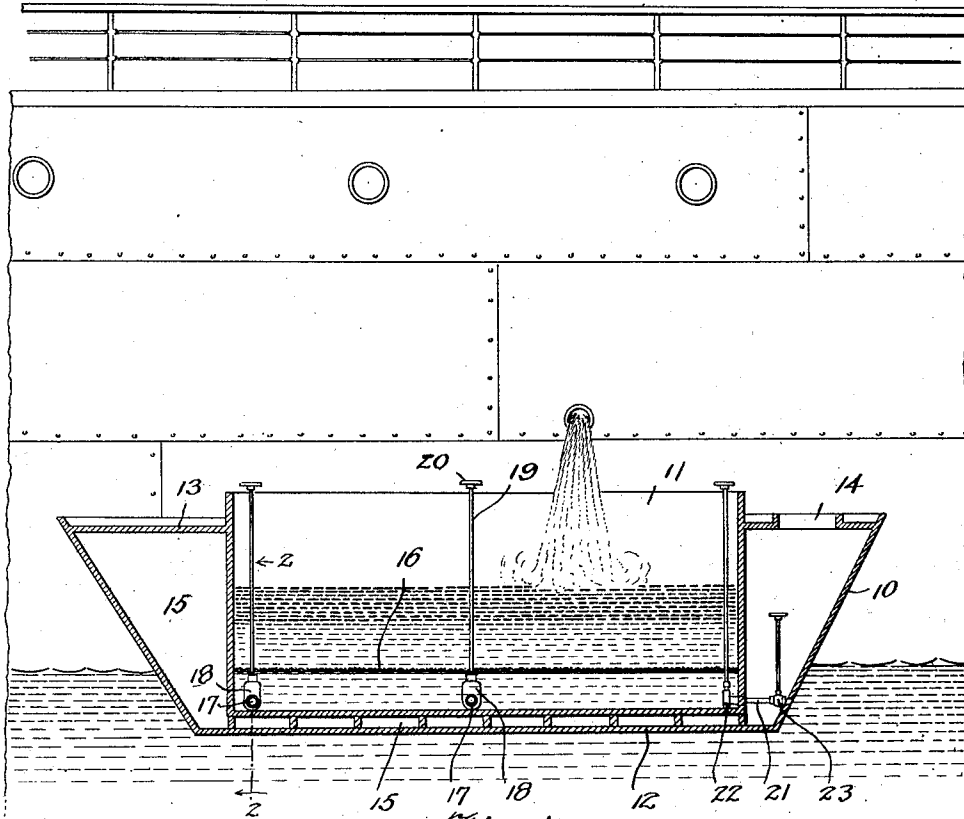


Fig. 4.

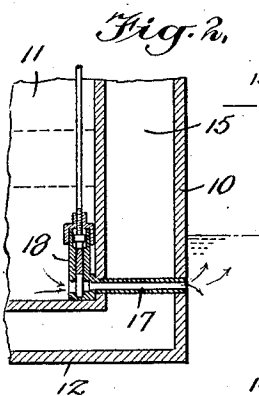


Fig. 2.

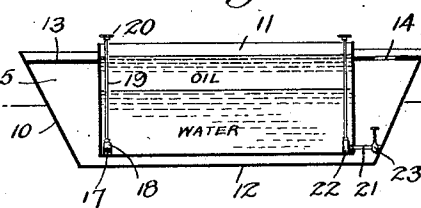


Fig. 3.

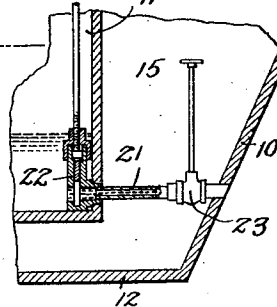


Fig. 5.

WITNESSES
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WASTE-FUEL-OIL-SALVAGING BARGE.

1,406,950.

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To all whom it may concern:

Be it known that I, HARRY M. FACKERT, a citizen of the United States, and a resident of Hillside, in the county of Union and State of New Jersey, have invented a new and Improved Waste-Fuel-Oil-Salvaging Barge, of which the following is a full, clear, and exact description.

This invention relates to a method and apparatus of collecting waste fuel oil or other substances or liquids which have a less density than water and is particularly designed for the collection of the same when discharged from steamers or other vessels, or which has been previously discharged therefrom by removing the same from the surface of the water.

According to the present practice where oil is used as a fuel in steamers or other oil burning vessels, large storage tanks are installed in the vessel in which a supply of fuel oil is contained and as the fuel oil is exhausted from each tank water is pumped into the same to act as a ballast. It almost invariably happens that a greater or less quantity of fuel oil remains in the tanks which mixes with the water later pumped in for ballast and which at the end of a voyage is pumped out for the purpose of emptying the tanks for refilling the same with fuel. At the present time more or less objection has been raised to the pumping of this mixture of water and oil into rivers, bays or harbors, and it is therefore an object of the present invention to provide a means for expeditiously separating the fuel oil from the water as the same is discharged from the vessel in order to prevent the discharge of the oil into the river, bay or harbor, and at the same time salvage the oil which would otherwise be wasted.

The invention further contemplates an apparatus of the character set forth which automatically operates to receive the mixed oil and water discharged from a vessel, separate the same, discharge the water and retain the oil.

As a further object the invention contemplates an apparatus of the character described which is comparatively simple in its construction, inexpensive to operate and which is highly efficient in its purpose.

With the above recited and other objects in view, the invention resides in the novel

construction set forth in the following specification, particularly pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that the right is reserved to embodiments other than those actually illustrated herein to the full extent indicated by the general meaning of the terms in which the claims are expressed and by variations in the phraseology of the same.

In the drawings—

Figure 1 is a longitudinal sectional view through a salvaging barge constructed in accordance with the invention and illustrating the use and operation of the same.

Fig. 2 is a sectional view taken approximately on the line 2—2 of Fig. 1 and illustrating the water discharge valve.

Fig. 3 is a similar sectional view illustrating the gage which is employed in connection with the apparatus.

Figs. 4 and 5 illustrate diagrammatically the action of the barge when in use.

Referring to the drawings by characters of reference, 10 designates the hull of a barge having arranged centrally thereof a receiving tank 11 spaced and supported from the bottom 12 of the barge and open at its upper end. The barge is provided with a deck 13 at its upper end which bridges the space between the outer sides of the tank 11 and the inner side of the sides of the hull, said deck being preferably provided with one or a number of hatchways 14 by which access may be had to the interior of the hull. The space defined by the bottom, the deck, the sides of the hull and the bottom and side walls of the tank constitutes a buoyancy chamber 15. The tank 11 is provided with a horizontally disposed foraminated baffle wall or screen 16 located adjacent its bottom for a purpose to be hereafter set forth. A plurality of outlet pipes 17 extend through the walls of the tank 11 and the side walls of the hull for establishing communication between the interior of the tank and the outer side of the barge. The inner end of each outlet pipe 17 communicates with a valve 18 having an upwardly extending controlling stem 19 and a manipulating handle 20 located at the upper end of the tank for the purpose of closing or opening the inner end of the outlet pipe. A gage tube 21 of trans-

parent material communicates with the interior of the tank adjacent the bottom thereof and is provided at its inner end with a valve 22 serving to close or open the same.

5 A second valve 23 is located adjacent the outlet end thereof within the buoyancy chamber whereby upon opening the inner valve 22 and closing said outer valve it is possible to observe the nature of the contents of the tank.

10 In use and operation the barge is anchored alongside of a vessel with the tank disposed in a position to receive the discharge of the waste fuel oil and water through its upper open end. When so arranged the valves 18 are closed, the valve 22 open and the valve 23 closed. The normal buoyancy of the barge when empty is such as to cause the bottom of the hull to be submerged to such a depth as to approximately bring the bottom of the tank in alignment with the surface of the water. The discharged mixture of fuel oil and water or other substance or liquid is received in the tank as illustrated in Fig. 1 until the same is approximately full. A sufficient length of time is allowed to elapse to permit the fuel oil or other substance which is of a density less than the water to float to the top; the valves 18 are then opened and the water within the barge in seeking a common level with the water in which the barge is floated will effect the drawing off of the water within the tank, the barge then being relieved of the weight of the water will be buoyed up to a point where the floating oil seeks to escape, at which point an observer will know by the gage 21 that the remaining contents within the tank is oil. The valves 18 will then be shut off and the process continued until the tank is wholly filled with fuel oil which has been collected and salvaged. Where the tank is designed to contain a large enough quantity, the valves 18 may be opened and left open until a complete filling of the same is effected with oil, the separating action being continuously carried on as the mixture is discharged into the same. In this instance the foraminated baffle wall or screen 16 serves to prevent disturbance of the contents between the same and the bottom of the container.

The method of effecting the collection of a mixture of water and a liquid having less density than water, separating the same and drawing off the waste to leave only the liquid consists essentially in leading the mixture into a tank supported by a buoyancy chamber within a body of water, establishing communication between the bottom of the tank and the body of water to permit of the discharge of the contents of the tank therefrom until the lower level of the liquid has a mutual level with the body of water outside of the tank and cutting

off communication between the tank and said body of water to retain only the liquid within the tank.

I claim:

1. An apparatus for salvaging fuel oil from a mixture of said oil and water, comprising a tank adapted to receive the mixture, means for buoyantly supporting the tank within a body of water, and means for respectively establishing or cutting off communication between the bottom of the tank and the body of water.

2. An apparatus for salvaging a liquid having less density than water from a mixture of said liquid and water, comprising a receptacle adapted to receive said mixture, means for buoyantly supporting said receptacle within a body of water, and means for respectively establishing or cutting off communication between the bottom of the receptacle and the body of water.

3. An apparatus of the character set forth comprising a buoyant hull, a receiving tank supported within said hull, and means at the bottom of said tank for opening the same to the exterior of said hull to provide a device for salvaging liquid having less density than water from a mixture of said liquid with water when floated in a body of water and filled with the mixture.

4. An apparatus for effecting the collection of a mixture of water and liquid having less density than water, the separation of the liquid therefrom, and the expulsion of the water to leave only the liquid remaining, comprising a buoyant hull adapted to be floated in a body of water, a centrally arranged tank adapted to receive the mixture, and means at the bottom of said tank for establishing communication between the same and the outside of the hull.

5. An apparatus for effecting the collection of a mixture of water and liquid having less density than water, the separation of the liquid therefrom, and the expulsion of the water to leave only the liquid remaining, comprising a buoyant hull adapted to be floated in a body of water, a centrally arranged tank adapted to receive the mixture, means at the bottom of said tank for establishing communication between the same and the outside of the hull, and means having communication with the interior of the bottom of the tank for observing the nature of the contents of the same at the bottom thereof.

6. The herein described method of effecting the collection of a mixture of water and a liquid having less density than water, separating the same and drawing off the water to a level, only the liquid remaining, consisting in leading the mixture into a tank buoyantly supported within a body of water, establishing communication between the bottom of the tank and said body of water to

permit of the discharge of the water from the tank until the lower level of the liquid has a mutual level with the body of water outside of the tank, and cutting off communication between the tank and said body of water to retain the liquid within the tank.

7. The herein described method of separating a liquid having less density than water from a mixture of said liquid and water, consisting in leading the mixture into the top of a tank buoyantly supported within a body of water, permitting a sufficient length of

time to elapse to allow the liquid to separate and float on the top of the water in the tank, establishing communication between the bottom of the tank and the body of water to permit of the discharge of the water within the tank therefrom until the lower level of the liquid thereon reaches a mutual level with the body of water outside of the tank, and cutting off communication between the tank and said body of water to retain the liquid within the tank.

HARRY M. FACKERT.