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TANK CLEANER

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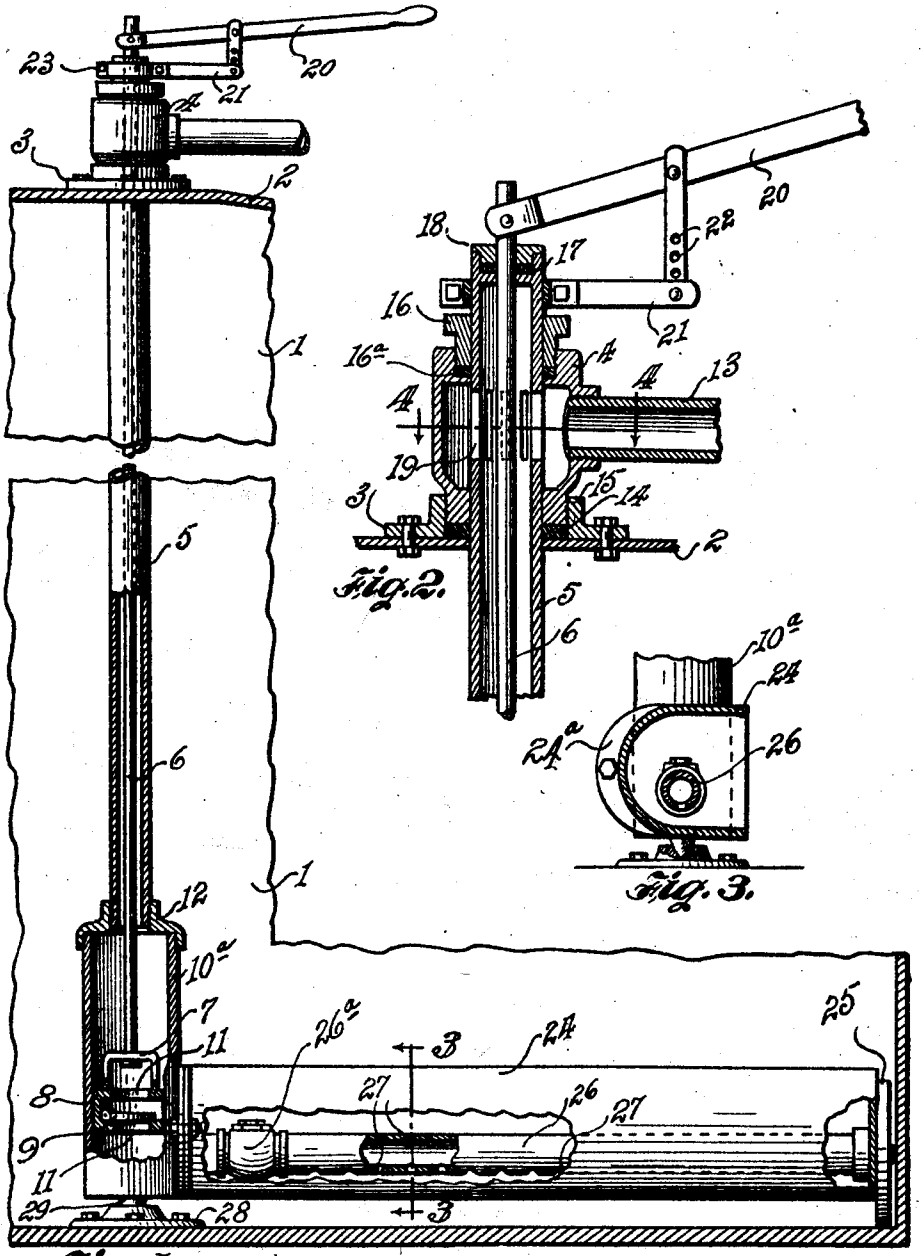


Fig. 1.

Fig. 2.

Fig. 3.

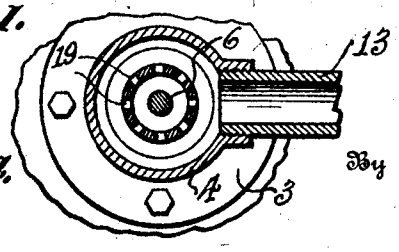


Fig. 4.

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TANK CLEANER.

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This invention relates to pumps, having more particular reference to pumps used in connection with oil tanks to remove the oil sediment at the bottom of the tank.

The primary object of the invention is to provide a tank cleaning pump so pivoted in the center of the tank as to enable its end to sweep the tank area containing the heavy oil sediment and remove the latter by a properly arranged piston and barrel in connection with a feeder disposed on the lower part of the tank cleaner or pump.

Another object of the invention is to provide a tank cleaner and pump whereby the suction employed through the feeder end is uniform throughout, thereby forming a complete vacuum in the suction process.

With the above and other objects in view, the invention will be better understood by a perusal of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification and wherein:

Figure 1 is a vertical sectional view of an oil tank in part and illustrating the invention disposed in the center of a tank with the feeding end abutting one side of the tank.

Figure 2 is an enlarged detail section view of the pump head and parts.

Figure 3 is a cross-sectional view of the feeder, the view being taken along line 3—3 of Figure 1, and

Figure 4 is a cross-sectional view of the pump head illustrated in Figure 2, the view being taken along the line 4—4 thereof.

In describing the invention in detail, similar reference characters are used to designate the various parts of the pump or cleaner, and wherein 1 denotes an oil tank having an opening in the top 2 for a collar 3 and in which is seated the pump head 4. Secured to the pump head is a pump cylinder 5, including a pump rod 6, the pump rod having disposed on its lower end a piston 7 preferably of the construction shown, although any suitable form of piston may be used. The piston has a valve 9 and valve ports or openings 11—11 for the passage of the silt or oil sediment therethrough. The pump cylinder 5 has secured to its lower end a pump barrel 10^a, provided with a cap closure 12, screw-threaded or otherwise affixed to the pump cylinder.

The pump head illustrated in detail in Figure 2 by the numeral 4 is interiorly hollowed for the proper collecting and ejection of the sediment arranged to pass outward through the discharge pipe 13. The pump cylinder passes through the head 4 and collar 3 the collar having a packing ring 14 and the lower end of the head is screw-threaded to properly seat in the upstanding portion or rim 15 of the collar. A closure cap 16 is also tightly screwed into the top of the head and likewise the upper end of the pump cylinder 5 is provided with a closure cap 18 and packing ring 17. Adjacent the interiorly hollowed portion of the head the pump cylinder is slotted longitudinally at the points 19 to provide ample passage space for the heavy sediment from the tank bottom forced upward by the piston, the piston rod 6 being operated by a pump handle 20 supported on the rod or bar 21, the latter having adjusting holes 22. The supporting rod as will be observed is attached to a collar 23 fastened around the pump cylinder 5.

Referring to Figure 1, attached to the pump barrel 10 and projecting laterally on a horizontal plane therefrom, is the feeder or sediment collector which comprises a receptacle open along its entire one side. This collector 24 is shown in detail in Figure 3, and the connecting end has a flange 24^a by means of which with bolts it is affixed to the pump barrel as shown. The opposite end of the collector is suspended off the tank bottom by a wheel 25 which occupies a position almost abutting the sides of the tank all around the tank when the device is being moved from point to point in the tank in the cleaning process. Inside the collector and spaced above the bottom thereof is a pipe 26 closed at its outer end next the wheel and having communication with the pump barrel 10^a to deliver the sediment to the pump. This pipe has a check valve 26^a and along it bottom or under side is perforated as at 27 along its entire length for entrance of the sediment. These holes, as might be apparent, are necessarily smaller near the inner end of the pipe than would be necessary at the outer end next the wall of the tank, since the traveling circular movement of the feeder would cover a larger tank area on the outer end. These holes are therefore graduated in size to suit these requirements.

Reference being had again to Figure 1, underneath the pump barrel 10 is a supporting plate 28 having a depressed center for the

purpose of seating a pivot pin 29 carried on the bottom of the barrel 10^a.

In operation of the tank cleaner or pump, the handle 20, being supported on the member and the latter secured to the pump cylinder, when it is desired to move the feeder from place to place in the tank, the handle is simply turned to the right or left, which operates through means of the pivot and wheel 25 to move the feeder along the bottom of the tank. The heavy sediment is thus gathered and fed into the mouth occupying the entire one side of the receptacle 24. The pump being in operation, the sediment is thus sucked up through the perforations into the pump barrel and carried to the top of the pump and through the discharge pipe 13. The operation is such that a complete vacuum is maintained at all times in the suction process of the pump, due to the spaced and sized perforations and capacity of the mouth to gather in the sediment. Although the cleaner is shown as supported upon a pivot and wheel, it may if preferable rest upon the tank bottom directly.

It is obvious from the foregoing that various changes and modifications may be made in the tank cleaner in keeping with the following claims.

What is claimed is:

1. An oil tank cleaner consisting of a pump cylinder, a pump barrel, piston rod and piston, and an operating handle for the piston rod; a receptacle connected to the lower end of the pump barrel and having one side communicating with the tank contents at the bottom of a tank; means for pivotally supporting and moving the receptacle around the radius of the tank bottom and means inside the receptacle for sucking up the sediment in the tank.

2. An oil tank cleaner pump comprising a cylinder adapted to occupy a central position in the tank, a pump barrel attached to the cylinder, a pump head secured to the cylinder at the upper end, said cylinder including a piston and piston rod; an operating handle pivoted to the rod and supported rigidly by said cylinder; a sediment feeder disposed at right angles in the bottom of the tank with respect to said pump barrel and having connection thereto; one side of the feeder being open for the gathering of the sediment; a pipe centrally disposed in the feeder and having perforations for entrance of the sediment sucked in by the pump to the pump barrel; a check valve in the pipe; a plate disposed under one end of the feeder and pump barrel and adapted to support the barrel in pivotal relation to the plate; and means on the outer end of the feeder to revolubly support same from the bottom of the tank.

3. A tank cleaner pump as described in claim 2 and in which the upper end of the cylinder has spaced slits or openings for the discharge of the sediment from the tank and a discharge pipe connected to the pump head adjacent to the slits.

4. A tank cleaner as described in claim 2, said feeder being open along one side of its longitudinal length for reception and gathering of oil sediment and wherein said pipe is provided with perforations, the latter being spaced and sized according to the tank area to be traversed by the moving feeder.

5. A tank cleaner as set forth in claim 2 and wherein the handle is pivotally attached to the pump rod and supported in rigid relation to the pump cylinder, such arrangement of the handle being adapted to swing the feeder radially around the bottom of the tank in the gathering of the sediment.

6. A tank cleaner as described in claim 2 and wherein the pump head has a closure cap and a packing ring in the bottom and top, and the pump head is seated in a collar with up-standing flanged portions upon the tank; said cylinder having also a closure with a packing ring.

In testimony whereof I have signed my name to this specification.

WALTER W. FOSTER.