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IMPROVEMENTS IN OR RELATING TO THE TREATMENT
OF OILY EFFLUENT

This invention relates to the removal of free oil/grease from trade effluent.

The oily trade effluent is normally treated by a 3-compartment oil interceptor or an air flotation method. The interceptor requires an operator to regularly and manually skim the oil from the three compartments. It is very tedious and time consuming as an operator will spend one full day attending to a few interceptors. The air flotation method involves the use of complicated machinery. It is not economical to maintain either of the two systems.

According to the invention there is provided apparatus for the removal of solids and free oil/grease from effluent and which comprises a settling tank for removing silt and oily solids from effluent discharge and arranged upstream of a skimming tank for removing free oil/grease from the effluent discharge, wherein the settling tank has an inlet for receiving the effluent discharge at a mid-depth position and an inclined overflow pipe leading to a mid-depth inlet of the skimming tank, and wherein the skimming tank has an oil/grease overflow pipe located in the upper level of the skimming tank and vertically adjustable to provide in the skimming tank an adjustable height to suit different types of oily/greasy effluent so that the accumulated oil/grease flows out at the

rate proportional/equal to that of oil/grease in the effluent flowing in once adjusted, and a pipe extending from the bottom of the skimming tank into a small tray at the upper level of the skimming tank, the tray being located opposite to the inclined overflow pipe and at a height a little lower than the oil/grease overflow pipe, the small tray having a drain out pipe at its base for the removal of water.

One embodiment of the invention will now be described by way of example, with reference to the accompanying drawings, in which:-

Figure 1 shows the plan view of the settling tank connected to the skimming tank to treat the oily trade effluent.

Figure 2 shows the elevation of the settling and skimming tanks in operation.

Figure 3 shows the plan view of the settling tank.

Figure 4 shows the detail view of the weir inside the settling tank.

Figure 5 shows the cross-section of the settling tank.

Figure 6 shows the plan view of the skimming tank.

Figures 7 and 8 show respectively the cross-sections of the length and width of the skimming tank.

With reference to the drawings, an aqueous effluent discharge inlet pipe 11 is fitted in a vertical position and opens into a settling tank 12 at a mid-depth position, with a

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90° elbow at the connection. The tank 12 consists of a baffle 13 at the pipe entrance, a hopper bottom 14 and an outlet weir 15, located at an upper level in the settling tank 12. The baffle 13 minimizes the turbulence generated in the tank as the trade effluent flows into the settling tank. The hopper bottom 14 holds the silt, sand and oily solids, while the treated effluent flows over the weir 15 into an oil skimming tank 18. The outlet pipe 16 from the weir is connected to an inlet pipe 17 which opens into the skimming tank 18 at a mid-depth position so that the pipe 17 is at an inclination of 45°, which allows the flow of treated effluent into the skimming tank 18 by way of gravity.

The skimming tank 18 is fitted with a baffle 19 at the pipe entrance. An oil/grease overflow pipe 20 is located in the upper level of the skimming tank 18 and has a vertically adjustable position so that the height of the oil/grease outlet drain can be altered and is fitted with a cover plate 21. There is also a pipe 22 extending from the bottom of the skimming tank 17 to a tray 23, located at the upper levels of the tank 18. The height of the tray 23 may also be made adjustable similar to the drain pipe position. The tray 23 is located opposite the effluent pipe 17 and at a height just below the height of the drain pipe 20. This allows for the separation of the oil/grease and water. The water collected in the tray 23 is drained therefrom by a drain out pipe 24 connected to the base of the tray.

The volume of the settling tank 12 is sized to accommodate a retention time of about 1 hour or more for the effluent flow, providing sufficient retention time for the silt, sand, etc., to settle. If the flow rate is higher/lower then the length, breadth or the depth of the settling tank has to be increased/decreased respectively to obtain desired retention time. Likewise, the length, breadth or depth of the skimming tank 18 may be modified to provide approximately the same residence time for the effluent flow.

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CLAIMS

1. Apparatus for the removal of solids and free oil/grease from effluent and which comprises a settling tank for removing silt and oily solids from effluent discharge and arranged upstream of a skimming tank for removing free oil/grease from the effluent discharge, wherein the settling tank has an inlet for receiving the effluent discharge at a mid-depth position, and an inclined overflow pipe leading to a mid-depth inlet of the skimming tank, and wherein the skimming tank has an oil/grease overflow pipe located in the upper level of the skimming tank and vertically adjustable to provide in the skimming tank an adjustable height to suit different types of oily/greasy effluent so that the accumulated oil/grease flows out at the rate proportional/equal to that of oil/grease in the effluent flowing in once adjusted, and a pipe extending from the bottom of the skimming tank into a small tray at the upper level of the skimming tank, the tray being located opposite to the inclined overflow pipe and at a height a little lower than the oil/grease overflow pipe, the small tray having a drain out pipe at its base for the removal of water.
2. Apparatus for the treatment of oily effluent and which is substantially as described herein with reference to the accompanying drawings.



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