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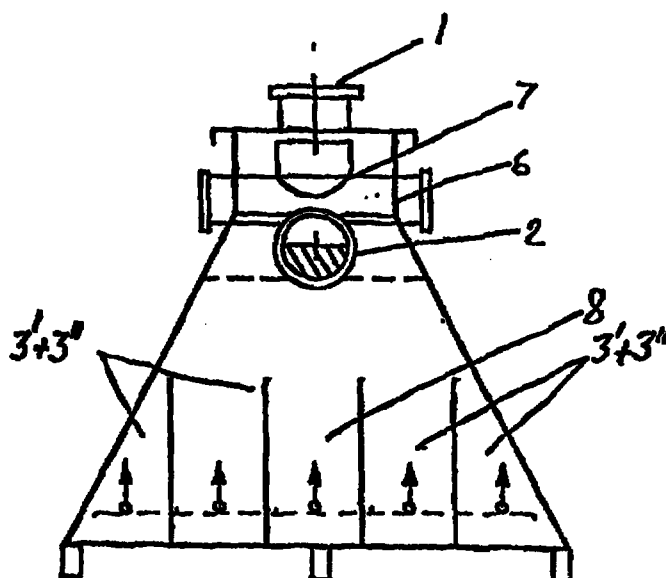
**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶: B01D 17/035, C02F 1/40	A1	(11) International Publication Number: WO 97/02080 (43) International Publication Date: 23 January 1997 (23.01.97)
(21) International Application Number: PCT/SE96/00909 (22) International Filing Date: 4 July 1996 (04.07.96) (30) Priority Data: 9502459-2 6 July 1995 (06.07.95) SE (71)(72) Applicant and Inventor: SCHELIN, Andreas [SE/SE]; Baldersvägen 6, S-392 47 Kalmar (SE). (74) Agent: CEDER, Lennart; Box 24072, S-104 50 Stockholm (SE).	(81) Designated States: AT, AU, CA, CN, CZ, DE, DK, EE, FI, GB, HU, JP, KR, LT, LV, NO, PL, PT, <u>SG</u> , SK, TR, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>	

(54) Title: A DEVICE FOR THE SEPARATION OF OIL FROM WATER**(57) Abstract**

This invention relates to a device for separation of oil from water containing impurities in industries, waste plants, ships or the like. The device consists of an oil separation tank (1), which is tapering upwards and is provided with an inlet (1) and an outlet (2). In its lower part it is provided with airing means in the form of perforated pipes. In its upper part the tank is provided with steering plates (6). Raw water (3') containing oil (3'') and light particles, is introduced in the inlet (1) of the tank (1), in which oil (3'') and particles are lifted up to the surface by the addition of air bubbles from the airing means (4 and 5). The floating mass is flushed into an oil outlet pipe (7), while cleansed water (8) is led out through the outlet (2). The inlet (1) and the outlet (2) have a level regulator or level indicator.



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A device for the separation of oil from water

This invention relates to a device for the separation of oil from water containing impurities in industries, waste plants, ships or the like places.

In the technique in question there are before known a number more or less technically complicated and expensive methods and devices as the US-patents 3.623.608, 4.564.457 and 5.158.678.

In wash racks for cars or industry with mechanical equipment and ships and other places as e.g. at petrol stations or communal waste plants wash water is mixed with oil, gravel or the like. Said water is then forwarded to waste water filtration plants where it has a negative effect upon the cleaning device which in many cases knocks out the function.

The purpose of this invention is to avoid the use of e.g. the before known expensive filter equipments and additions of chemicals.

The device according to the invention is characterized by what is evident from the patent claim enclosed.

The invention will now be described with reference to the drawings enclosed where figure 1 shows the device in a side view, figure 2 shows figure 1 in an underneath view and figure 3 shows a cross section of figure 1.

The device according to the invention consists of an oil separation device I which is tapering upwards and provided with an inlet 1 and an outlet 2, where the inlet 1 and the outlet 2 are arranged with level regulator means or level indicator means for the steering of oil and water by means of a register means. The oil separation device I is suitably arranged tapering upwards, as the oil layer then becomes deeper and thus closer, which means that a large number of the particles accompanies in the oil and the attained cleaning effect removes the contents of water to 2-6%. Polluted water containing sand, gravel, oil or the like is treated in a suitable way e.g. in a coarse



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separation device not shown so that raw water 3' containing oil 3" and lighter particles can be introduced through the inlet 1 of the oil separation device I. The oil separation device I is in its lower part provided with airing means partly in the form of perforated pipes, cloth or membrane as air outlet 4 having tight-fitting holes for forming rug partly an air inlet 5 for the treatment of raw water 3' containing oil 3" and lighter particles. The oil separation device I is also provided with steering plates 6 which can be welded either longitudinally or transversally depending on requisite capacity. At the addition of air into airing means 4 and 5 oil 3" and lighter particles are lifted up onto the raw water 3' as a floating mass owing to lower density than the raw water 3' and are kept and flushed into an oil outlet in the form of a pipe means 7 and are conducted from there to a collecting means not shown in the form of e.g. a barrel, while cleansed water 8 is led out through the outlet 2 for further removal. The length of pump of waters 3' and 8 used is extended by means of the steering plates 6 and is subjected for air treatment the whole way from the inlet 1 to the outlet 2, which gives a more effective separation and higher capacity. The oil 3" can be emptied via the pipe means 7 independently of side. For the cleaning of the oil separation device I this is in its lower part provided with an outlet 9 for the drawing of water. All drawing of water is steered by means of level regulator means and level indicator means and closeable or adjustable air-regulator means or a register means. Through the shaping of the oil separation device I the diameter is reduced and the oil layer increases in thickness. The air in adjustable and regulating amount keeps the oil on place whereas the separated water 8 in a short time becomes completely crystal-clear. Since raw water has high contents with detergents which mix with oil, the floating effect can be affected and mix with escaping water. When that is so, one further step can be performed for this treatment and measure through the connection of an oil separator or a water separator.

The invention is of course not limited to this design but can evidently be varied within the scope of the invention idea.

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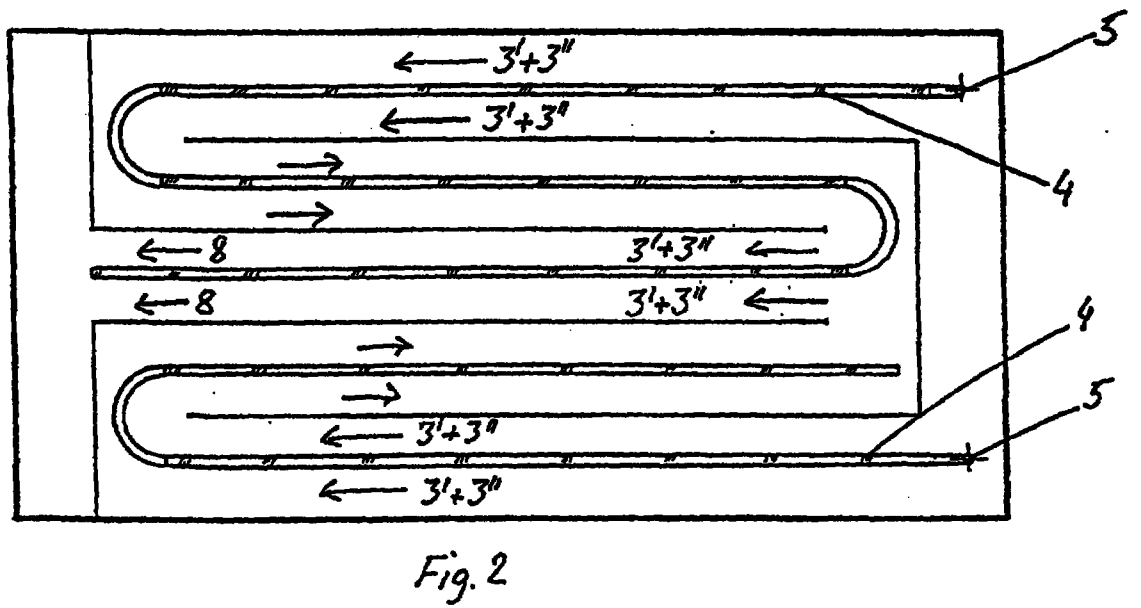
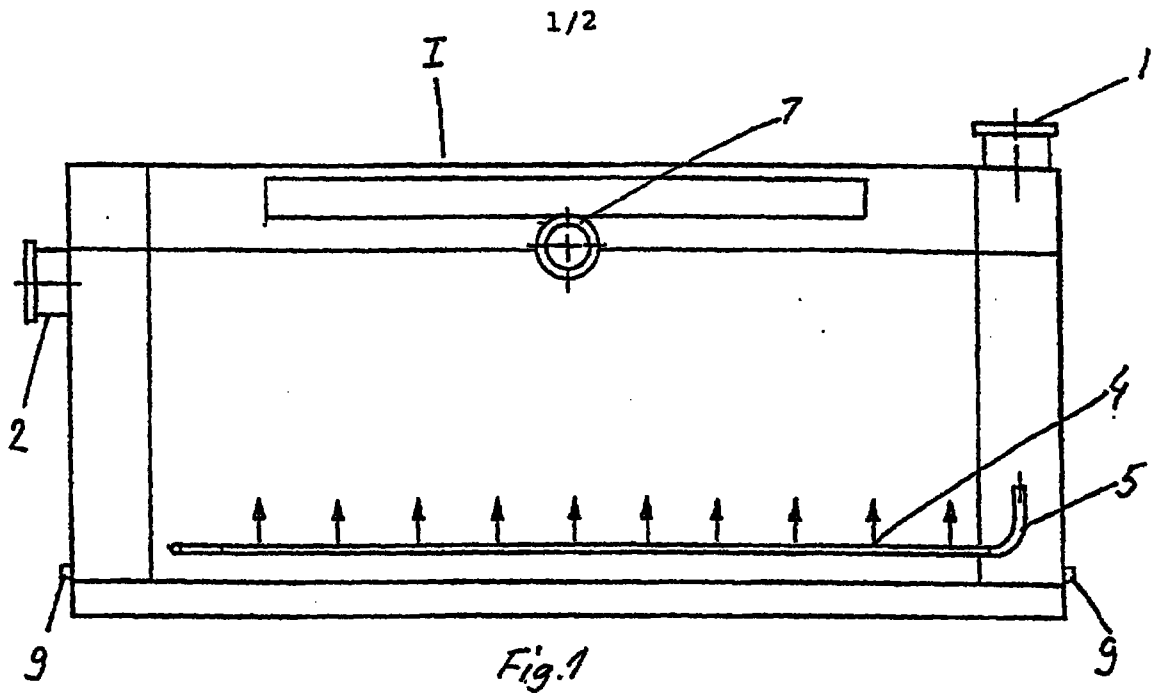
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C L A I M

1. A device for the separation of oil from water containing impurities in industries, waste plants, ships or the like places, characterized in that it consists of an oil separation device(I), which is tapering upwards and provided with an inlet(1) and an outlet(2) and which in its lower part is arranged with partly airing means in the form of perforated pipes, cloth or membrane as an air outlet(4) and an air inlet(5) partly an outlet(9) for the drawing of water at the cleaning and which in its upper part is arranged with steering plates(6), which are welded either longitudinally or transversally depending on capacity, whereas raw water(3') containing oil(3'') and lighter particles, which parts(3' and 3'') can be obtained at the coarse separation of the impurities is introduced in the inlet(1) of the oil separation device(I), in which oil(3'') and lighter particles by means of the addition of air to the there arranged airing means(4 and 5) are lifted up onto the raw water(3') as a floating mass and there kept and rushed into an oil outlet in the form of a pipe means(7) and are conducted from there to a collecting means in the form of a barrel, while cleansed water(8) is led out through the outlet(2) for further removal whereas the inlet(1) and the outlet(2) are arranged with level regulator means or level indicator means for the steering of oil and water by means of a register means.



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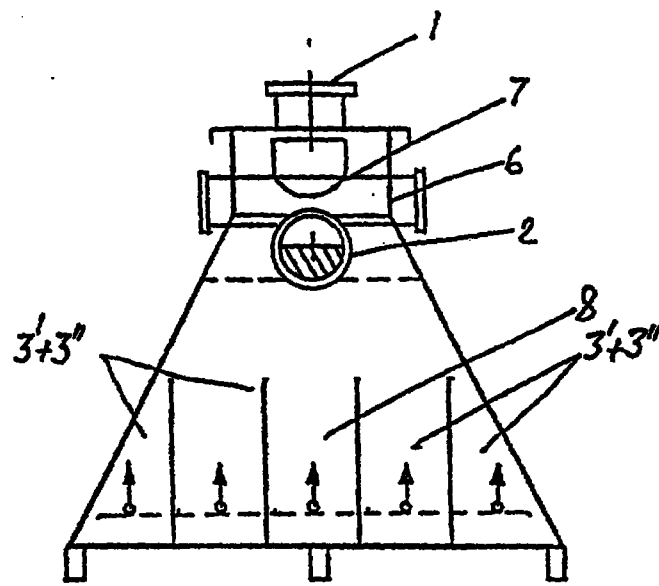


Fig. 3

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separation device not shown so that raw water 3' containing oil 3" and lighter particles can be introduced through the inlet 1 of the oil separation device I. The oil separation device I is in its lower part provided with airing means consisting of perforated pipes, cloth or membrane with an air outlet (4) having tight-fitting holes for forming a rug and with an air inlet (5) for the treatment of raw water 3' containing oil 3" and lighter particles. The oil separation device I is also provided with regulating plates 6, which can be welded either longitudinally or transversally depending on requisite capacity. At the addition of air into airing means 4 and 5 oil 3" and lighter particles are lifted up onto the raw water 3' as a floating mass owing to lower density than the raw water 3' and are kept and flushed into an oil outlet in the form of a pipe means 7 and are conducted from there to a collecting means not shown in the form of e.g. a barrel, while cleansed water 8 is led out through the outlet 2. The length of pump of waters 3' and 8 used is extended by means of the regulating plates 6 and is subjected for air treatment the whole way from the inlet 1 to the outlet 2, which gives a more effective separation and higher capacity. The oil 3" can be emptied via the pipe means 7 independently of side. For the cleaning of the oil separation device I this is in its lower part provided with an outlet 9 for the drawing of water. All drawing of water is steered by means of level regulator means and level indicator means and closeable or adjustable air-regulator means or a register means. Through the shaping of the oil separation device I the diameter is reduced and the oil layer increases in thickness. The air in adjustable and regulating amount keeps the oil on place whereas the separated water 8 in a short time becomes completely crystal-clear. Since raw water has high contents with detergents which mix with oil, the floating effect can be affected and mix with escaping water. When that is so, one further step can be performed for this treatment and measure through the connection of an oil separator or a water separator.

The invention is of course not limited to this design but can evidently be varied within the scope of the invention idea.

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Claim

1 A device for the separation of oil from water containing impurities in industries, waste plants, ships or the like places, characterised in that it consists of an oil separation device(I), which is tapering upwards and provided with an inlet (1) and an outlet(2) and which is in its lower part provided with airing means consisting of perforated pipes, cloth or membrane with an air outlet (4) and an air inlet (5) and with an outlet (9) for the drawing of water at the cleaning of the device (I) and which is in its upper part provided with regulating plates (6), which are welded either longitudinally or transversally depending on capacity, whereas raw water (3') containing oil (3'') and lighter particles, which parts (3' and 3'') can be obtained at the coarse separation of the impurities is introduced in the inlet (1) of the oil separation device (I), in which oil (3'') and lighter particles by means of the addition of air to the there arranged airing means (4 and 5) are lifted up onto the raw water (3') as a floating mass and there kept and flushed into an oil outlet in the form of a pipe means (7) and are conducted from there to a collecting means in the form of a barrel, while cleansed water (8) is let out through the outlet (2), whereas the inlet (1) and the outlet (2) are arranged with regulator means or level indicator means for the regulating of oil and water by means of a register means.

