

No. 745,519.

PATENTED DEC. 1, 1903.

E. PRAVICA & E. DOUILLET.
APPARATUS FOR SEPARATING OIL FROM WATER.

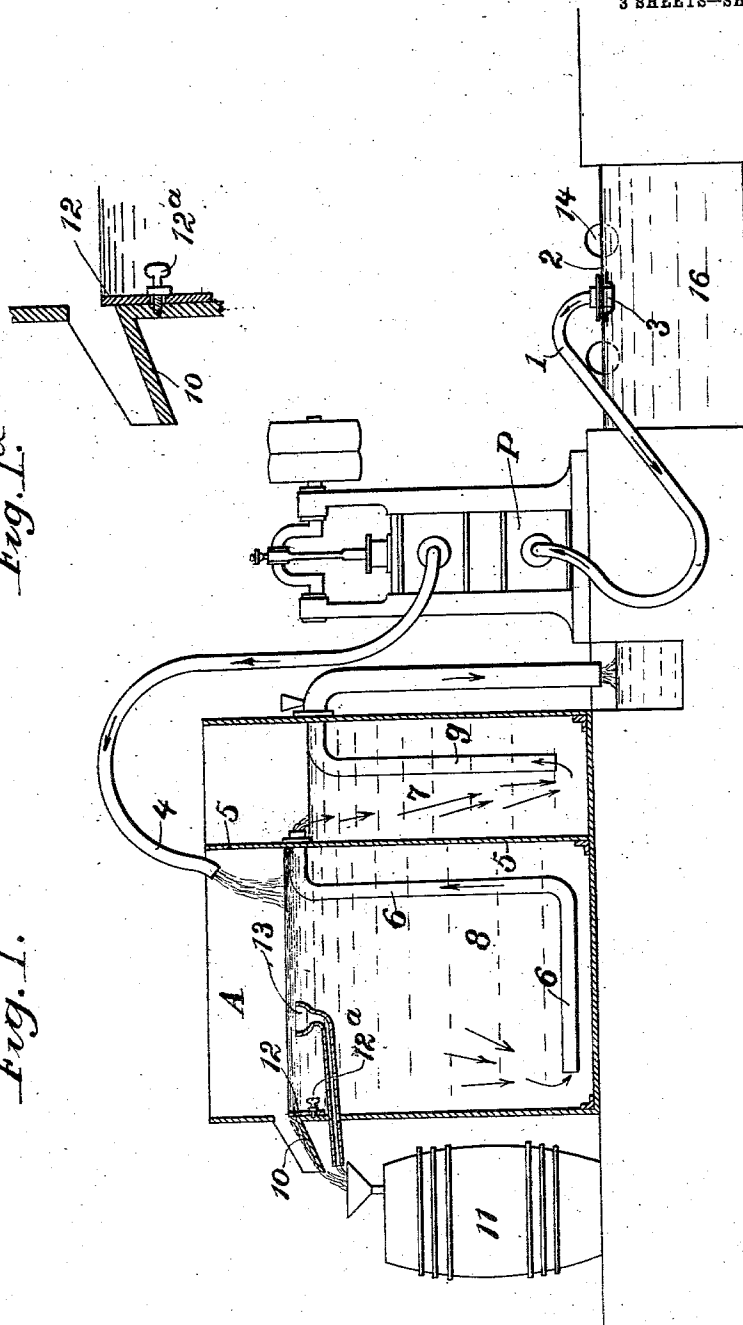
APPLICATION FILED MAR. 31, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

Fig. 1^a.



Witnesses.
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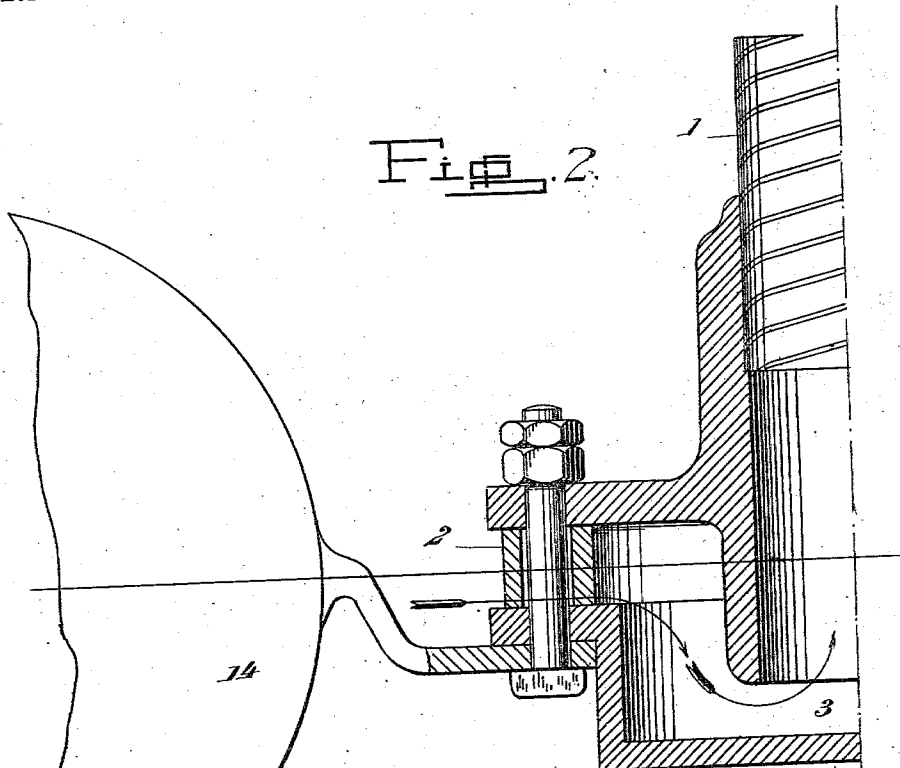
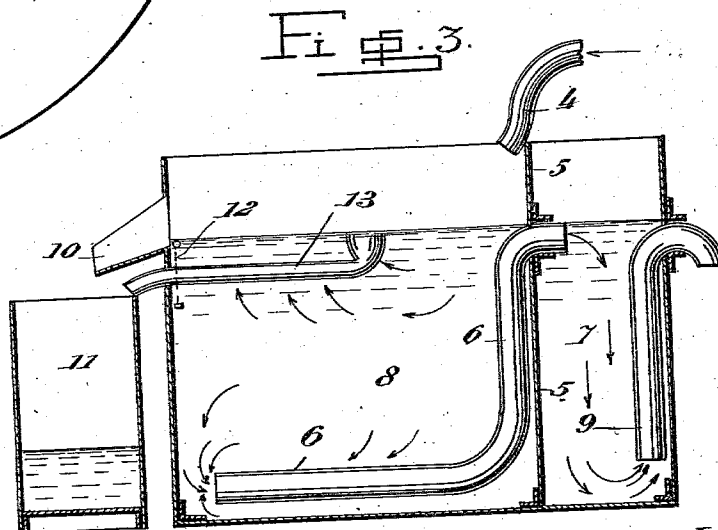
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3 SHEETS—SHEET 2.

NO MODEL.



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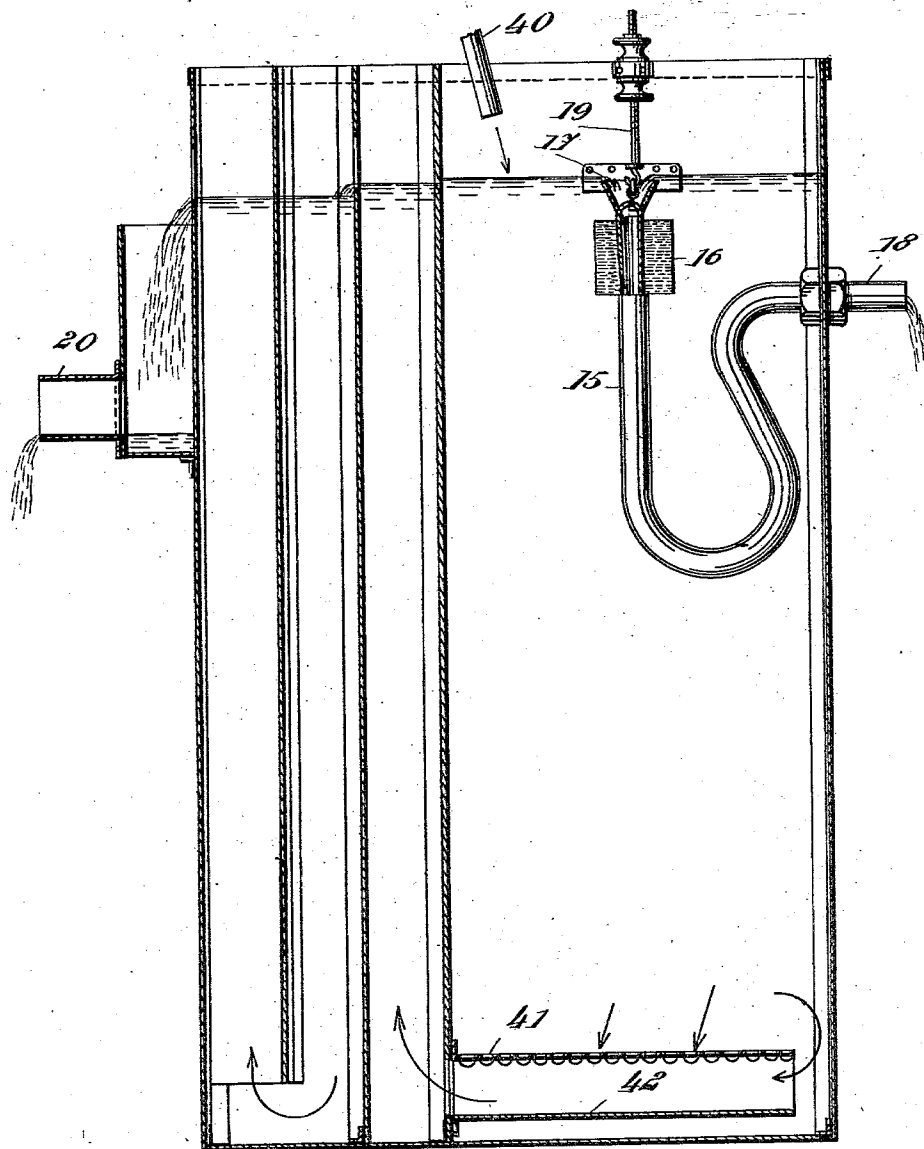
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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR SEPARATING OIL FROM WATER.

SPECIFICATION forming part of Letters Patent No. 745,519, dated December 1, 1903.

Original application filed September 3, 1901, Serial No. 74,196. Divided and this application filed March 31, 1902. Serial No. 100,758. (No model.)

To all whom it may concern:

Be it known that we, EUGÈNE PRAVICHIA and EDOUARD DOUILLET, citizens of the French Republic, and residents of La Garenne-Colombes, France, have invented certain new and useful Improvements in Apparatus for Separating Oil from Water, of which the following is a specification, this application being a division of our prior United States application, filed September 3, 1901, under Serial No. 74,196.

In practice the oils thrown by means of the oiler or syringe upon the working parts of marine and other engines, as well as oils and fatty materials which having passed through the lubricators escape after having lubricated the working parts, are for the most part lost. These fatty substances aboard ship necessarily fall to the bottom of the engine-compartment, where there is already some sea-water. On locomotives they fall upon the track. In manufacturing machines they collect at the bottom thereof.

On steamships jets of sea-water are often played upon the bearings to prevent them from becoming hot, and this water forms, with the lubricating substance, a mixture from which up to the present it has been impossible to extract the oils and grease.

Besides the advantage gained by separating the oils the invention is of great importance, especially in preventing explosions commonly caused by feeding the boilers of condensing engines with water containing oil.

By means of the apparatus forming the object of this invention all the fatty substances in the water are separated. This separation is effected by means of devices working either in the open air or under pressure hot or cold, so as to collect the oils and fatty matters and also to purify the feed-water. The devices operating to this end can be used for any operations having as an object the collecting of oils and fatty matters. On board steamers a special or an ordinary pump can be used. For example, that serving to empty the engine-compartment can also be used to convey the mixture into these separators.

In the accompanying drawings, Figure 1 is a sectional diagram of the entire apparatus

embodying this invention. Fig. 1^a is an enlarged detail. Fig. 2 is a vertical section of a fractional part of a separator. Fig. 3 is a vertical section of the other part of the same separator. Fig. 4 is a vertical section of another form of apparatus.

The device shown in Figs. 2 and 3 is in two parts. The first part consists of a pump P (shown in Fig. 1) and furnished with a special suction device, Fig. 2. This suction device floats in the water to be treated, so as to only permit the pump to draw from the upper portion of the liquid mass. The floats maintaining the device at the surface of the liquid may be formed of hollow cylinders or composed of a series of hollow metallic spheres, Fig. 2, as shown at 14 in Fig. 2. 1 is a flexible metal tube connected to the pump. The fatty matters gathering on the surface around the float and entering at 2 penetrate to chamber 3, whence they are sucked up by the pump P and forced through pipe 4 into a separating-tank A. This tank is divided by the partition 5 into two compartments 7 and 8, communicating by means of a tube 6, through which the water passes into the tank 7, thus forming, with the tank 8, communicating vessels, but with this peculiarity, that the bottom of the compartment 8 is in communication with the upper portion of compartment 7. From the compartment 7, which is furnished with an overflow-pipe 9, the water separated from the fatty matters runs off. These fatty substances, owing to difference of density, float on the surface of the water in the compartment 8, and thence pass by spout 10 into a receptacle 11, where they are stored entirely apart from the water. 12 is a small gage for regulating the escape. This gage may be adjusted up and down by means of set-screws 12^a to raise or lower the fluid-level according to the depth of the fatty material floating upon the surface of the water. 13 is another overflow, principally used in marine engines. In factories the oils and fatty matters which are usually allowed to run into the drain can be collected by the use of these collecting-tanks A placed in the track of this escape. These tanks will separate the liquids, (oil, water, and fatty

matters,) gathering to one side the oils, while at the same time allowing the water to continue its course. On the other hand, in condensing-engines it will only be necessary to
5 cause the condensation-water to pass without pressure into one of these tanks A, so as to collect without expense the oils and fatty matters, which will have served to lubricate the inside of the steam-cylinders. At the same
10 time the feed-water will have been freed from all fatty bodies, which constitute an element of danger when introduced into a boiler. As may be seen, these tanks alone may advantageously replace the filtration of waste water
15 to be used to feed the boilers.

Fig. 4 shows another separating-tank working in the open air and specially intended for use on board steamers. Its overflow is placed in the middle of the liquid layer to be treated,
20 so as to occupy the central portion—that is to say, that part which is least exposed to displacement by the motions of the ship. Moreover, this overflow oscillates at a point situated on a level with the liquid, so that what-
25 ever may be the movement of this liquid, the surface of which always tends to remain horizontal, the upper stop of the overflow will always follow the movement of the liquid without vertical displacement either upward or
30 downward. For this purpose the tube 15 is furnished with a lead weight 16. The oil collecting at the surface of the liquid overflows at 17 to run off through 18 into barrels prepared for its reception. The regulating-screw
35 19, swivel-jointed to the top of the overflow 17, serves to adjust and hold said overflow in a suitable central position. The separation of the liquids takes place by the laws of density. The water escapes at 20, the oil at 18.

The water, forced up by a pump as in the
40 first-described device, enters the separating-tank of Fig. 4 through the tube 40. When passing from one compartment to the other, the water is obliged to pass through the small
45 holes 41, made following the generating-line of a tube 42, establishing communication between the said tanks.

Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—
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1. Means for separating fatty substances from water, comprising a receptacle for the mingled fats and water, an oscillatory overflow for drawing off the fats from the surface
55 of the water, adjusting mechanism whereby said overflow is located about centrally of the surface area, and a conduit for drawing off the water from the bottom of the receptacle as the charge flows in at the top.

2. A tank for separating fatty substances
60 from water, comprising a plurality of compartments, the first of which initially receives the mingled fats and water, conduits leading the water from each preceding compartment into the next succeeding, an oscillatory over-
65 flow for leading the fats rising to the surface of the initial compartment to a receptacle, and means for holding said overflow about centrally of the liquid-surface area in said compartment.

In testimony whereof we have hereunto set
70 our hands in presence of two witnesses.

EUGÈNE PRAVITCHA.
EDOUARD DOUILLET.

Witnesses:

ADOLPHE STURM,
EDWARD P. MACLEAN.