Dec. 16, 1930. I. MÜLLER 1,784,943

SEPARATOR FOR LIGHT LIQUIDS.

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Fig. 1.

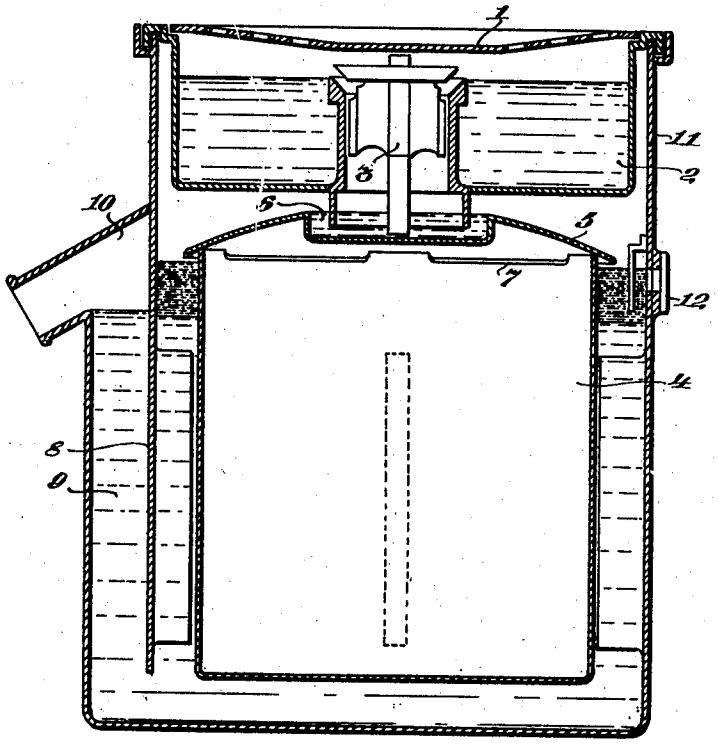
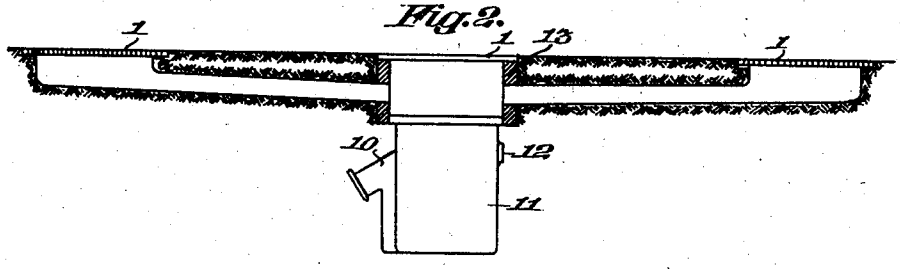


Fig. 2.



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Fig. 3.

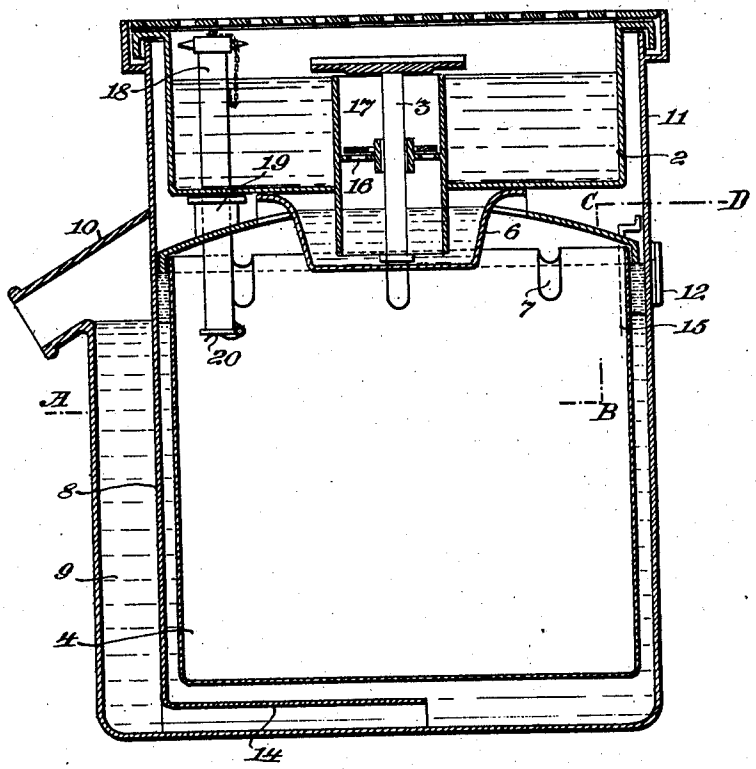
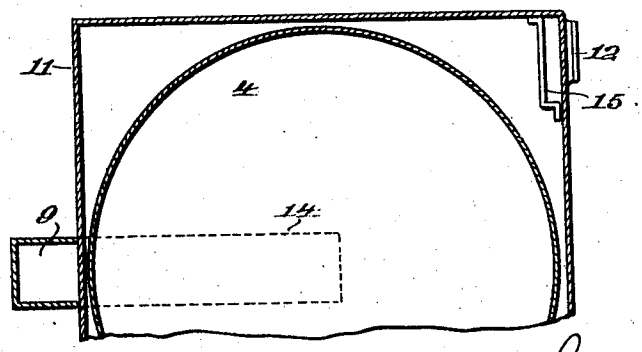


Fig. 4.



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Patented Dec. 16, 1930 1,784,943

UNITED STATES PATENT OFFICE

IGNAZ MÜLLER, OF VIENNA, AUSTRIA

SEPARATOR FOR LIGHT LIQUIDS

Application filed July 13, 1929, Serial No. 378,131, and in Austria July 13, 1928.

My invention relates to a separator for light liquids, in which at the inlet or admission place a dross collector is built in and the flow of water through the separator may be controlled and interrupted by a float being subjected to the influence of the separated light liquid. The invention consists therein that the accumulating vessel for the separated light liquid is arranged in the interior of a casing being closed at the top by the mud collector in such manner that the water flows over the cover of the accumulating vessel and enters an annular space forming the separating chamber.

According to the invention the arrangement is such that between the dross collector and the separating chamber a liquid seal is formed by the water flowing into the separating chamber, said seal cutting off the separating chamber for the light liquid from the liquid inlet.

A convenient form of the separator is that in which the accumulating vessel for the light liquid forms directly the float, which controls a checking member, over which the water is carried into the separating chamber.

In the drawings:

Fig. 1 shows a form of the improved separator in a diagrammatic cross sectional view. Fig. 2 shows a mode of application of the separator, the latter being illustrated in an elevation. Figs. 3 and 4 show a modified form of the separator in cross section and top view respectively.

In the form shown in Fig. 1 the separator comprises a casing 11, which is closed at the top by a mud collector 2 provided with an entrance grid 1. In the casing 11 an accumulating vessel 4 for the separated light liquid being closed by a removable cover 5 is arranged in such manner that the water flows over the cover 5 into an annular space forming the separating chamber. The connection between the accumulating vessel 4 and the separating chamber is effected by overflow openings 7 provided in the upper edge of the accumulating vessel 4.

The latter is in the present case arranged so as to be a float, which fills up nearly completely the interior of the casing 11 below the mud collector, and the cover 5 of such vessel forms a liquid seal 6 for the separating chamber by the water flowing into the latter, so that the separating chamber is always gas tightly closed from the water inlet.

The separating chamber may be shut off from the mud collector by a member 3 controlling the passage of water, the seat for such member being formed by the mud collector. Such controlling member, which is formed in the present case by a valve, rests loosely on its seat, so that it may be lifted outwards. The valve body is provided at its upper and lower side with stop stems, by which the valve abuts either on the entrance grid 1 or on the float 4. If the float is empty, the valve 3 is maintained in opened position by the lower valve stem. If the float is filled with light liquid, it lowers and releases the valve 3 which closes by its own weight and performs, its closing movement independently of the stroke of the float.

The light liquid which may be contained in the water passes together with the latter through the inlet grid 1 and enters the separator, whereas mud and dross for example stones or other solid constituents or the like are deposited on the bottom of the dross collector 2. The liquid passes over the inlet valve 3 and through the liquid seal 6 into the annular separating chamber, whereby on the extended way and by flowing over the large surface of the cover 5 the light liquid is quickly separated. The cover, therefore, acts as a separating wall. The light liquid owing to its reduced specific weight is accumulated on the surface of the water around the accumulating vessel 4 and reaching the openings 7 enters the accumulating vessel 4. The separated water flows below the partition 8 in the rising channel 9 and outlet 10 to the drain or the like.

If so much of the separated light liquid has been accumulated in the vessel 4 which in empty condition owing to the buoyancy maintains the inlet valve 3 in opened position, that the buoyancy is overcome, the vessel 4 descends and the inlet valve 3 will close the inlet by its own weight. Now, if further liquid flows into the separator, the

inlet valve being closed, such liquid will no more flow into the separating vessel but dam up at the inlet grid 1, which indicates that the vessel 4 is to be discharged.

For the purpose of accumulating larger amounts of light liquid the separator may be connected to an accumulating receptacle of any capacity, which is connected to the opening 12, such opening being otherwise closed.

If the separator is used as collector for a plurality of inlet channels, as shown in Fig. 2, the casing 11 is situated in a somewhat lower position, so that the upper edge of the same has a corresponding distance from the inlet grid, whereupon between the upper edge of the separator and the inlet grid 1 a pit 13 made of cement or other suitable material is arranged to which all inlet channels are connected.

In the form shown as an example in Figs. 3 and 4 the mantle of the casing has a square cross section and that of the accumulating vessel a round cross section or vice versa, so that the casing walls contacting the float vessel serve as guides for the latter, whereas the portions of the casing walls being remote from the float vessel enable the discharge device for the light liquid or some other necessary portions to be arranged and secured without hindering the float vessel in its movement. The mantle of the casing 11 may have a square or other cornered cross section. By such arrangement a perfect utilization and division of the interior of the casing into a light-liquid accumulating chamber and a light-liquid separating chamber is enabled, and in this case the walls of the casing 11 serve at the same time as guides for the float vessel 4, so that guiding ribs or the like may be completely dispensed with. Moreover by such arrangement will be attained, that the connecting members projecting inwards in the casing, such as the discharge opening 12 and a screen 15 protecting the same do not hinder the free movement of the float vessel though the interior of the casing is completely utilized.

The mouth opening of the vertical water rising channel 9 at the bottom of the separator may be elongated so as to form a horizontal water discharge channel which by preference extends to or beyond the center of the separating chamber. By such horizontal portion of the water discharge channel will be prevented that by the water suddenly falling at the side of rising channel in the separating chamber fatty constituents may be carried into the rising channel, since such constituents are separated on the long way to the mouth, of the horizontal water discharge channel 14. The latter offers a rest to the float vessel being in lowered position.

In the inlet channel 17 of the dross collector 2 a controlling or regulating device 16, for example as shown a slide valve, may be arranged, by which the separator may be adjusted to the desired amount per second (for example litres per second) of the inflowing liquid.

The light liquid may be drawn off either by lifting out or removing the accumulating vessel or by means of a pump, for which purpose a socket 18 is fixed in the dross collector, the lower end of such socket passes through the tubular piece 19 of the cover 5 into the accumulating vessel 4 and enables the sucking tube of a pump to be introduced.

In order to prevent the dammed water from getting through the socket 18 in the accumulating vessel a spring urged valve 20 is provided or said socket 18 may be capable of being drawn out or removed.

What I claim is:—

1. In a separator for light liquids a casing, a dross collector closing such casing, an accumulating vessel for the light liquid, a cover for the accumulating vessel and an annular space constituting the separating chamber, both being arranged in such manner that water is compelled to flow over the cover, ere it enters the said separating chamber, and a liquid seal for the separating chamber, said seal being created and maintained between the dross collector and the separating chamber by means of the water flowing into the separating chamber.

2. In a separator for light liquids a casing, a dross collector closing such casing, an accumulating vessel for the light liquid, a cover for the accumulating vessel and an annular space constituting the separating chamber, both being arranged in such manner that water is compelled to flow over the cover, ere it enters the said separating chamber, said cover being constructed so as to form a liquid seal for the separating chamber between the dross collector and the separating chamber by means of the water flowing into the separating chamber.

3. In a separator for light liquids a casing, a dross collector closing such casing, an accumulating vessel for the light liquid, a cover for the accumulating vessel and an annular space constituting the separating chamber, both being arranged in such manner that water is compelled to flow over the cover, ere it enters the said separating chamber, a controlling member for the water passing from the dross collector to the separating chamber, the accumulating vessel forming a float which in empty condition maintains the controlling member in opened position, whereas the said member performs automatically its closing motion when the float descends under the influence of the inflowing liquid.

4. In a separator for light liquids a casing, a dross collector closing such casing, an accumulating vessel for the light liquid, a cover for the accumulating vessel and an annular

space constituting the separating chamber, both being arranged in such manner that water is compelled to flow over the cover, ere it enters the said separating chamber a controlling member for the water passing from the dross collector to the separating chamber, the controlling member being loosely supported on the accumulating vessel, so that it may be lifted out outwards, the accumulating vessel forming a float which in empty condition maintains the controlling member in opened position, whereas the said member performs automatically its closing motion when the float descends under the influence of the inflowing liquid.

5. In a separator for light liquids a casing, a dross collector closing such casing, an accumulating vessel for the light liquid, a cover for the accumulating vessel and an annular space constituting the separating chamber, both being arranged in such manner that water is compelled to flow over the cover, ere it enters the said separating chamber, the mantle of the casing having cornered cross section, the mantle of the accumulating vessel round cross section, so that the walls of the casing form directly guides for the floating accumulationg vessel and between the casing and the accumulating vessel free spaces are formed for the reception of connecting members and the like.

6. In a separator for light liquids a casing, a dross collector closing such casing, an accumulating vessel for the light liquid, a cover for the accumulating vessel and an annular space constituting the separating chamber, both being arranged in such manner that water is compelled to flow over the cover, ere it enters the said separating chamber, a water admission opening, a controlling member therein which is to be actuated by hand for the purpose of adjusting the cross sectional area of the admission opening and the speed of admission.

In witness whereof I affix my signature.

IGNAZ MÜLLER.