

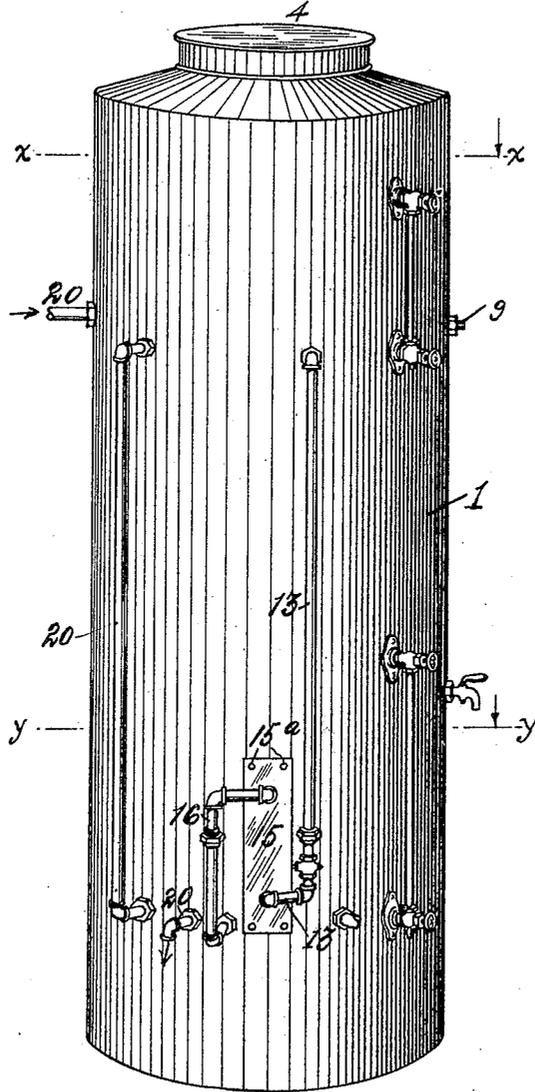
F. E. CORWIN.
OIL PURIFIER.
APPLICATION FILED JULY 12, 1919.

1,404,931.

Patented Jan. 31, 1922.

3 SHEETS—SHEET 1.

Fig. 1.



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F. E. Corwin
By Howard H. Catty

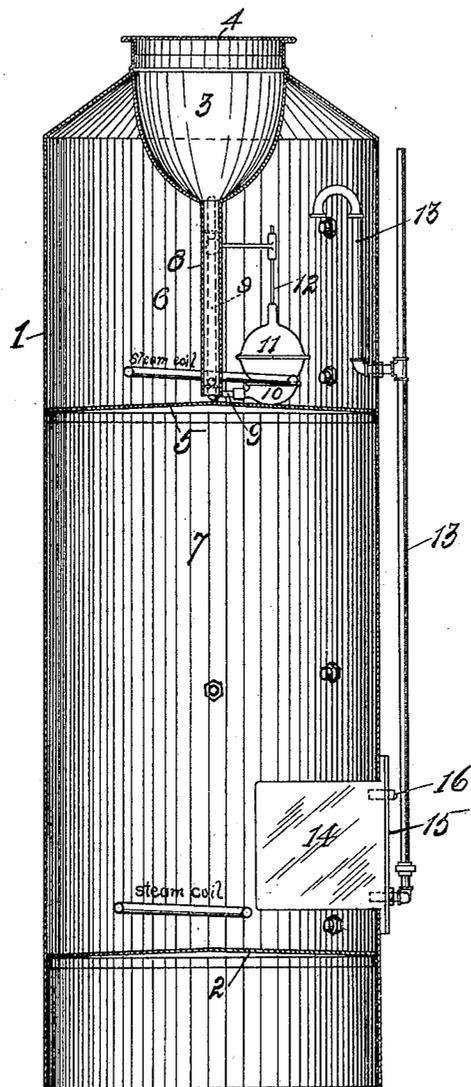
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

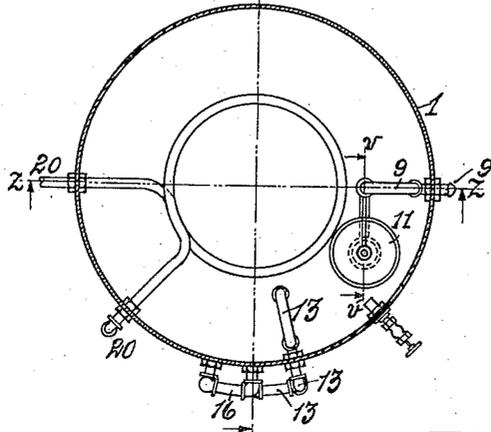


Fig. 4.

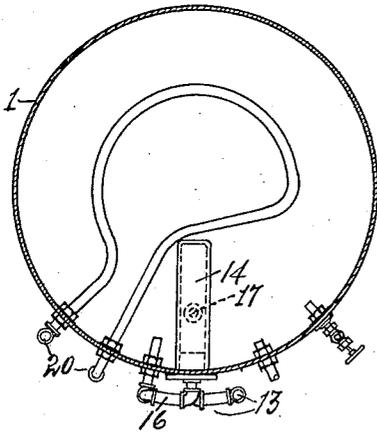


Fig. 5.

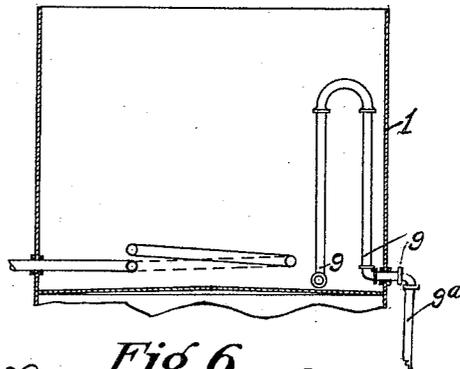


Fig. 6.

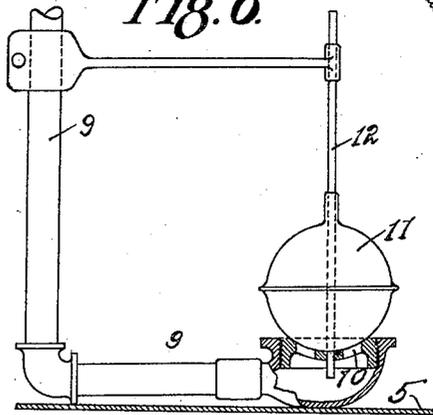


Fig. 7.

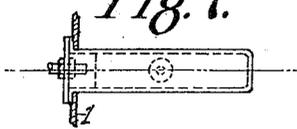
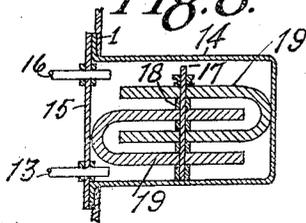


Fig. 8.



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UNITED STATES PATENT OFFICE.

FRANK E. CORWIN, OF TOLEDO, OHIO, ASSIGNOR TO THE NATIONAL OIL PURIFIER COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

OIL PURIFIER.

1,404,931.

Specification of Letters Patent. Patented Jan. 31, 1922.

Application filed July 12, 1919. Serial No. 310,350.

To all whom it may concern:

Be it known that I, FRANK E. CORWIN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Oil Purifiers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to a device for purifying oils which have been used for lubricating purposes, and is designed to remove dirt, sediment and metallic particles from such oils in order to render them fit for re-use. This invention is intended to provide improvements upon the device illustrated in the United States Letters Patent granted to me November 23, 1915, Number 1,161,197, and is designed to simplify and to reduce in compass the apparatus described in said patent, as well as to render the parts more accessible. My invention is also intended to provide automatic control of the devices for withdrawing the heavier liquids when separated by gravity from the oils, as well as for feeding the oils, when so separated, to the purifying devices.

The invention is fully described in the following specification, and while in its broader aspect it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of my purifying apparatus; Fig. 2, a central, vertical, sectional elevation of the same, seen from the right of the view in Fig. 1; Fig. 3, a sectional plan-view, taken on line $x-x$, Fig. 1; Fig. 4, a sectional plan-view, taken on line $y-y$, Fig. 1; Fig. 5, a central, vertical, sectional elevational of a portion of my device, taken on line $z-z$, Fig. 3; Fig. 6, an elevation, partly in section and on an enlarged scale, of a portion of my apparatus, taken on line $v-v$, Fig. 3; Fig. 7, a top plan-view of the magnet-case hereinafter referred to, detached, and Fig. 8, a central, longitudinal, vertical, sectional elevation of said case.

Like numerals of reference indicate like parts throughout the drawings.

In the drawings, 1 is an upright metal cylindrical case or drum closed near its bottom by a diaphragm 2 and having through the center of its top an opening into which is fitted a funnel-like vessel 3 having a removable lid 4. The vessel 1 is provided with a diaphragm 5 which divides the interior of the vessel into two principal chambers 6 and 7. The oil to be purified is poured into the vessel 3 and flows downwardly through the sieve-like tube 8 into the upper chamber. In machine-shop practice these oils are usually mixed with an excess of water. The oils quickly separate from and rise to the top of the water. One of the objects of my invention is to now automatically remove and waste the water without disturbing the remaining oils which are to be purified and transferred to and stored in the lower chamber 7.

To effect the removal of the water there is provided a waste-pipe 9 having, near the bottom of the chamber 6, an upturned mouth 10 which forms a seat for a float-valve 11 provided with a vertical stem 12 which slides in suitable guides which insure the proper seating of the valve. This valve 11 is of such regulated buoyancy that it will float in water while in oil it will remain seated. Upon the upper chamber 6 being charged with a mixture of oil and water the two liquids will, by reason of their difference in gravity, slowly separate. When the float is immersed in the lower stratum, water, it will rise and the water will now be siphoned down through waste-pipe 9 and down-pipe 9^a. (See Fig. 5). When the descending upper stratum of oil reaches and partly bathes the float 11 the float's buoyancy is insufficient to hold it in elevated position. The float now drops into closed position preventing further escape of liquid through the pipe 9. When the accumulating oil in the chamber 6 reaches a sufficient height it overflows through pipe 13 and passes down through this pipe and discharges into the lower part of the device illustrated in Figs. 7 and 8 and now to be described.

14 is a narrow, elongated, rectangular, metal case the mouth of which is flanged and covered with a plate 15 through the lower part of which pipe 13 enters, and from the

upper part of which pipe 16 emerges. The flanges of the case 14 cover with a tight fit the margin of an opening in the drum 1, which opening is just large enough to permit the introduction of the case 14. By uncoupling the unions in the pipes 13—16 and removing the screws 15^a from the plate 15 the case 14 with its magnets may be removed for cleansing. In the case 14 are supported upon a bolt 17 and separating pieces 18 two powerful permanent horseshoe magnets 19, arranged as shown, with their poles overlapping each other, their edges touching the sides of the case 14, the bend of one magnet touching the back end of the case, and with the bend of the other magnet touching the front cover of the case. This arrangement is such that oil entering through pipe 13 must traverse a sinuous course along each pole of each of the magnets in order to reach the outlet from the case through the pipe 16. The pipe 16 discharges, as illustrated in Figs. 1 and 4, into the lower chamber 7. In its sinuous course along and between the poles of the magnets, metallic particles suspended in the oil are attracted, caught, and retained by the poles of the magnets, thus rendering the oil fit for re-use.

Both chambers 6—7 are provided with suitable gauge-glasses, cocks and hand-holds which will be understood without illustration or explanation.

20 is a steam-pipe which supplies steam to steam-coils in the upper and lower chambers 6—7, to warm the oil to render it more fluid and to promote its flow.

Having described my invention, what I claim and desire to secure by Letters Patent is,—

1. In an apparatus of the described character, a vessel divided into an upper and a lower chamber, combined with a conduit leading from the upper to the lower chamber, said conduit including a casing removably secured in the wall of the lower chamber, and a series of magnets mounted in said casing.

2. In an apparatus of the described character, an oil receptacle having an opening through its wall, a case removably fitted to said opening and in communication with said receptacle, magnets in said case disposed to form a sinuous path for liquids traversing the chamber of said case, and devices for feeding oil to said case.

3. In an apparatus of the described character, an oil receiving receptacle, magnets removably secured in said receptacle and having their poles opposed and overlapping each other, a case for the magnets, a supply-pipe leading into the lower part of the case, and a discharge outlet from the upper part of the case leading into said oil receiving receptacle, the arrangement being such that oil entering said case traverses both poles of each of said magnets.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK E. CORWIN.

Witnesses:

MARK WINCHESTER,
GRACE SMITH.