Feb. 24, 1942. L. EHLERS 2,274,132

OIL RECLAIMING APPARATUS

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Fig. 1.

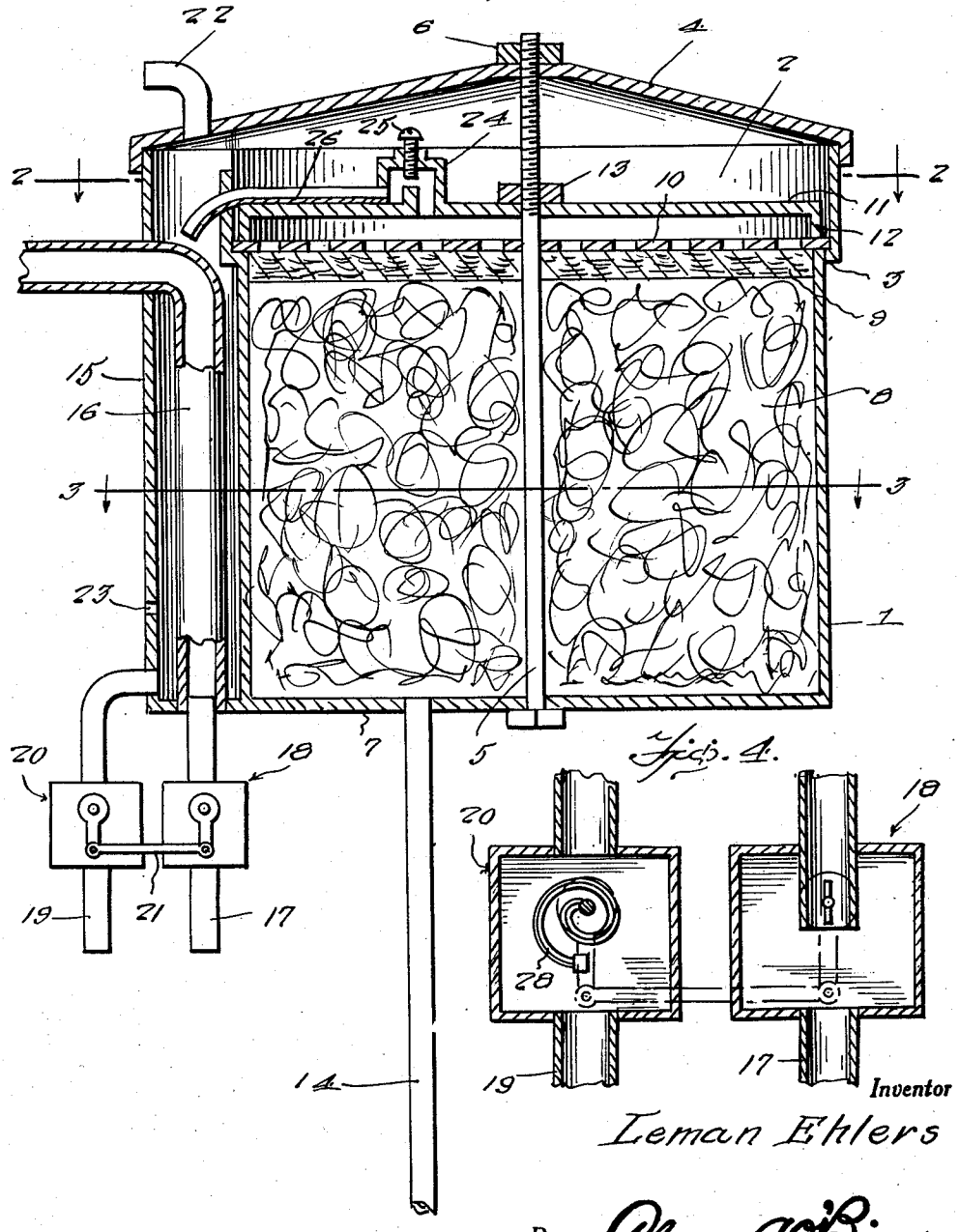


Fig. 4.

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Fig. 2.

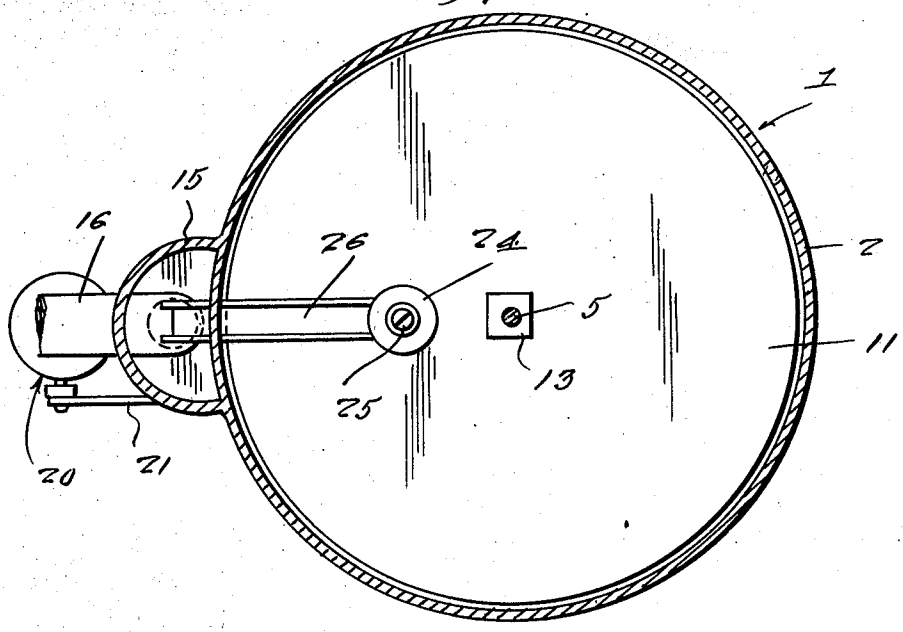
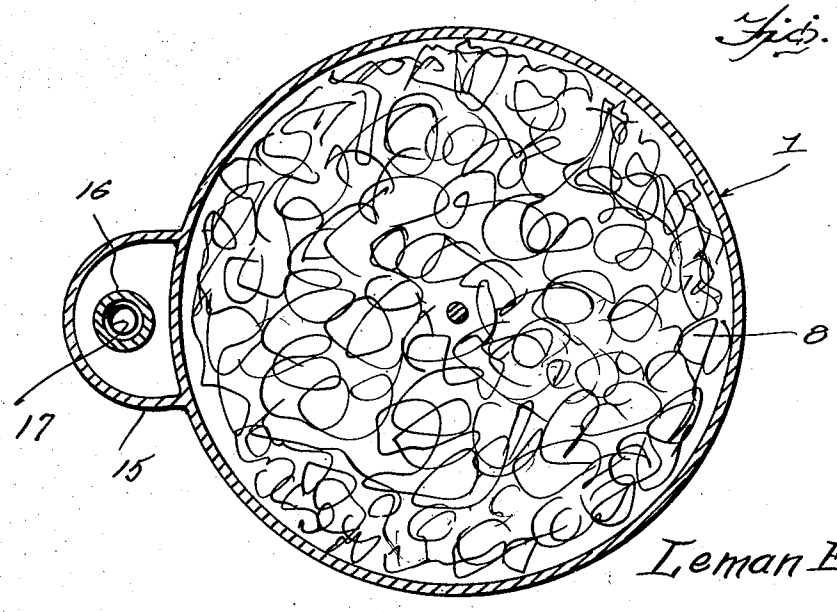


Fig. 3.



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Patented Feb. 24, 1942

2,274,132

UNITED STATES PATENT OFFICE

2,274,132

OIL RECLAIMING APPARATUS

Leman Ehlers, Manning, R. F. D., Iowa

Application December 18, 1939, Serial No. 309,885

1 Claim. (Cl. 210—122.5)

The present invention relates to new and useful improvements in oil reclaiming devices particularly for internal combustion engines and has for its primary object to provide, in a manner as hereinafter set forth, an apparatus which, in addition to filtering solid particles of foreign matter from the oil, includes novel means utilizing a portion of the hot exhaust gases from the engine for eliminating by vaporization foreign matter of a liquid nature that may be present in the oil.

Another very important object of the invention is to provide an oil reclaiming apparatus of the aforementioned character comprising means for automatically controlling the temperature to which the oil is subjected.

Other objects of the invention are to provide an oil reclaiming apparatus of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a vertical sectional view through an oil reclaiming apparatus constructed in accordance with the present invention.

Figure 2 is a view in horizontal section, taken substantially on the line 2—2 of Figure 1.

Figure 3 is a horizontal sectional view, taken substantially on the line 3—3 of Figure 1.

Figure 4 is a vertical sectional view through the automatic temperature control means.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a casing 1 which may be of any suitable dimensions and material. The upper portion of the casing 1 is enlarged, as at 2, in a manner to provide a shoulder 3. Mounted on the casing 1 is a removable closure 4. The closure 4 is secured in position through the medium of an elongated bolt 5 having threaded thereon a nut 6. It will be observed that the elongated bolt 5 extends centrally through the casing 1 from the bottom 7 of said casing.

The major portion of the casing 1 is filled with a loose, yielding filtering material 8, such as cotton waste. Above the cotton waste 8 is a layer of felt 9. Above the felt 9 is a perforated plate 10 which rests on the shoulder 3.

The perforated plate 10 is retained in position through the medium of a cover plate 11. The plate 11 is provided with a depending marginal skirt 12 which spaces said plate from the perforated plate 10. A nut 13 on the bolt 5 secures the cover plate 11. An oil delivery pipe 14 from the oil pump of the engine is connected with the bottom 7 of the casing 1.

The reference numeral 15 designates a vertically elongated vaporizing chamber on the casing 1. It will be noted that the vaporizing chamber 15 is open at its top and that the closure 4 is formed to extend thereover. Extending downwardly in the chamber 15 from the upper portion thereof is a heating pipe 16 from the exhaust manifold of the engine. An exhaust pipe 17 is connected to the lower end of the heating pipe 16. Interposed in the pipe 17 is an exhaust gas control valve which is designated generally by the reference numeral 18.

Connected with the lower portion of the vaporizing chamber 15 is an oil return pipe 19 to the crank case of the engine. Interposed in the oil return pipe 19 is a heat responsive unit 20 which is operatively connected to the valve 18 by means including a link 21.

Above the chamber 15 the closure 4 is provided with a vent 22 which may be connected with the intake manifold of the engine. Also, the reference numeral 23 designates a vent in the lower portion of the chamber 15. If desired, the vent 23 may be connected with the usual breather pipe of the engine.

The cover plate 11 is provided with an outlet conduit 24 for receiving filtered oil from the casing 1. A manually adjustable valve 25 is provided in the outlet conduit 24 for controlling the volume of oil. Communicating with the outlet conduit 24 is a trough 26 which extends into the chamber 15 and which is adapted to deposit the oil on the upper portion of the heating pipe 16.

It is thought that the operation of the apparatus will be readily apparent from a consideration of the foregoing. Briefly, oil from the oil pump of the engine enters the lower portion of the casing 1 through the pipe 14. This oil is forced upwardly through the filtering elements 8 and 9 which remove the solid particles of foreign matter from said oil. The filtered oil passes through the perforated plate 10 and flows past the control valve 25 in the outlet 24 into the trough 26. The trough 26 deposits the oil on the upper portion of the vertical pipe 16 down which

it flows in the chamber 15. Thus, the liquid impurities are removed from the oil by vaporization. The vapors are removed through the vents 22 and 23. The reclaimed oil then returns to the crank case of the engine from the vaporizing chamber 15 through the pipe 19. As the hot oil passes through the unit 20 the element 28 in said unit responds to the temperature thereof and actuates the valve 18 for automatically controlling the flow of the exhaust gases through the heating pipe 16. In this manner the desired temperature to which the oil is subjected may be automatically maintained under various conditions.

It is believed that the many advantages of an oil reclaiming apparatus constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

An oil reclaiming apparatus comprising a casing having an oil delivery pipe connected with its lower portion, said casing including an enlarged upper portion providing a shoulder, a vertically elongated vaporizing chamber on the casing, said chamber and said casing being open at their tops, a removable closure for the casing extending over the chamber, a vertical bolt in the casing securing the closure in position, a filtering agent in the casing below the shoulder, a perforated retaining plate for the filtering agent mounted on the shoulder in the casing, a cover plate mounted on the bolt beneath the closure, said cover plate including a depending skirt engaged with the perforated plate to space the cover plate above the perforated plate, a retaining nut for the cover plate threaded on the bolt, an oil outlet conduit on the cover plate communicating with the casing below said cover plate for receiving oil therefrom, a manually adjustable control valve in the outlet conduit, a vertical heating pipe in the vaporizing chamber having its upper end extending laterally outwardly of a side wall of the chamber and with its lower end extending through the bottom of the chamber, a trough on the cover plate for conducting the oil from the outlet conduit to the upper portion of the heating pipe and an oil return pipe connected to the bottom portion of the vaporizing chamber.

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