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OIL TANK AND COOLER ASSEMBLY
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Fig. 6

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OIL TANK AND COOLER ASSEMBLY

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4 Claims. (Cl. 257—191)

1. This invention relates in general to liquid containing tanks and more particularly to oil tanks for internal combustion engines.

One of the primary objects of the invention is to provide such a tank that will be of light weight material, simple in construction and assembly and that will by nature of its construction provide for maximum surface contact for oil and cooling air with the tank for maximum results in cooling of the oil before delivery into the main oil chamber to be delivered to the working parts of the engine.

With the foregoing and other objects in view, the invention resides in the combination of parts and in the details of construction hereinafter set forth in the following specification and appended claims, certain embodiments thereof being illustrated in the accompanying drawings, in which:

Figure 1 is a view in side elevation of the oil tank;

Figure 2 is a view in vertical section thereof;

Figure 3 is a view in vertical longitudinal section taken along line 2—3 of Figure 2;

Figure 4 is a view in top plan of the tank;

Figure 5 is an enlarged view in section taken along line 5—5 of Figure 3; and

Figure 6 is a view in perspective, partly broken away, of the assembly.

Referring more particularly to the drawings, the main oil tank, or reservoir is shown at 1. A stationary pointer 3, which is an integral part of the cover, furnishes a reference point to give a reading of a rotatable oil level gauge 2, carried by a rotatably mounted shaft 4, having a gear 5 meshing with a gear 6 to which shaft 7 is secured an arm 8 carrying a ball float 9 that rests on the top of a column of oil in the reservoir. Variance in the height of the column of oil causes movement of the ball float whose movement is transmitted to the gauge 2. A conventional filler opening and cap therefor are shown respectively at 10 and 11.

The main oil reservoir 1 is enclosed in spaced relationship by a shroud or shell 12 consisting of two identical halves welded together between which is a member having a series of longitudinally arranged radially extending corrugations, the member extending about the outer periphery of the wall of the main reservoir so as to provide oil and air passages by means about to be described.

As viewed in Figures 3, 5 and 6, these corrugations, are provided with an outer side wall 14 and an inner side wall 16. The hot oil from the oil pump is delivered under pressure into an inlet 16 in the base below the bottom wall 14 of the reservoir 1 where it strikes baffles 17, as shown by arrows in Figure 6, to be diverted radially outwardly through passages 27 to each alternate corrugation passage 18. The oil then rises in passages 19 until it reaches the top 19 of the reservoir and overflows into the reservoir 1. The outlet for the oil from the main reservoir to the lubrication system is shown at 28.

By some suitable air suction pump means attached to outlet 21 of shroud 12, cooling air is sucked in from the exterior into passages 28 and 29 and through alternate corrugation passages 22 on either side of the oil filled corrugation passages 16. Thus by the time the oil reaches the top of its passages 16, it is cooled by the air passages 22. The oil and air passages are sealed from each other by two end plates having corrugated protrusions 30 and 31 that match the corrugations of the oil and air passages thereby allowing air to come in from the outside and keeping the oil in the inside passages 16. Thus by the time the oil reaches the top of its passages, it is cooled by the air in the air passages.

The engine is designed for simultaneous piston strokes. While there is no air displacement, there is an alternate compression and vacuum in the crankcase tending to damage such weaker parts as gaskets and impairing proper function of parts of the engine. To correct this condition, pipe 25 is connected in any suitable manner to the crankcase of the engine and extends through the tank. It is to be understood that constant churning of the oil in the crankcase may create an oil vapor and if this vapor is directed to the atmosphere there will be a loss of oil. Therefore, each stroke of compression will send the oil vapor through pipe 25 and will strike and rebound from baffle plate 24. The clear air will then flow around and between the baffle plate 24 and the housing 26 and consequently through pipe 23 which leads to the atmosphere, this feature accomplishing both protection against breakage and proper function and the conservation of oil. Pipe 23 represents an oil reservoir breather pipe filled with a baffle plate 24 and pipe 25 is an engine balance air pipe.

From the foregoing it will be seen that there has been provided a simple and efficient self-contained oil reservoir and air cooling system therefore in which the maximum surface radiation and cooling effect is provided.

1. In an oil tank and cooling assembly therefor, a main oil reservoir, an outside shell surrounding said oil reservoir, an inlet for flow of hot oil in
the bottom of said shell below the bottom of said oil reservoir, a plurality of vertical passages for oil flow therefrom between the walls of said oil reservoir and shell, an inlet from said oil passages into said oil reservoir, vertical passages alternately disposed on either side of said oil passages for air flow, said air passages being adapted to be filled with cool air sucked therethrough from the exterior of said shell by suction means for cooling the oil as it passes through said vertical oil passages into said oil reservoir.

2. In an oil tank and cooling assembly therefore, a main oil reservoir, an outside shell surrounding said oil reservoir, an inlet for flow of hot oil in the bottom of said shell below the bottom of said oil reservoir, baffles in the bottom of said casing for diverting said oil radially outwardly in the bottom of said shell, a plurality of vertical passages between the walls of said oil reservoir and shell for oil flow from the bottom of said shell, an inlet from said oil passages into said oil reservoir, vertical passages alternately disposed on either side of said oil passages and between said reservoir and shell walls for air flow, said air passages being adapted to be filled with cool air sucked therethrough from the exterior of said shell by suction means for cooling the oil as it passes through said vertical oil passages into said oil reservoir.

3. In an oil tank and cooling assembly therefore, a main oil reservoir, an outside shell surrounding said oil reservoir, an inlet for flow of hot oil in the bottom of said shell below the bottom of said oil reservoir, a plurality of vertical passages formed by a plate having vertical corrugations disposed between the walls of said shell and said oil reservoir, one alternate set of said vertical passages being for flow of oil from the bottom of said shell and the other alternate set of vertical passages being for the flow of cool air sucked therethrough from the exterior of said shell by suction means for cooling the oil as it passes through said vertical corrugated oil passages into said oil reservoir.

4. In an oil tank and cooling assembly therefore, a main oil reservoir, an outside shell surrounding said oil reservoir, an inlet for flow of hot oil in the bottom of said shell below the bottom of said oil reservoir, baffles in the bottom of said casing for diverting said oil radially outwardly in the bottom of said shell, a plurality of vertical passages formed by a plate having vertical corrugations disposed between the walls of said shell and said oil reservoir, one alternate set of said vertical passages being for flow of oil from the bottom of said shell and the other alternate set of vertical passages being for the flow of cool air sucked therethrough from the exterior of said shell by suction means for cooling the oil as it passes through said vertical corrugated oil passages into said oil reservoir.

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