

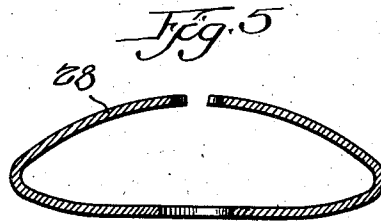
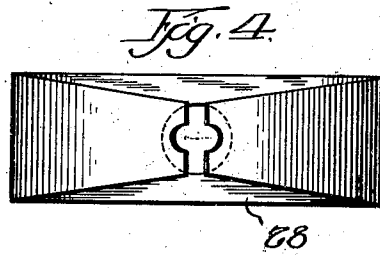
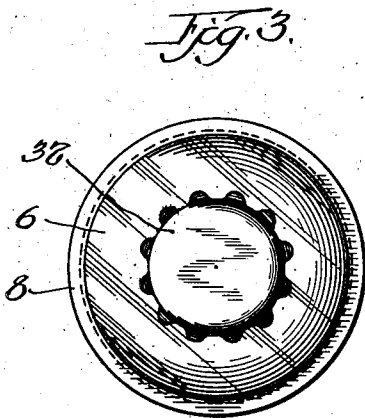
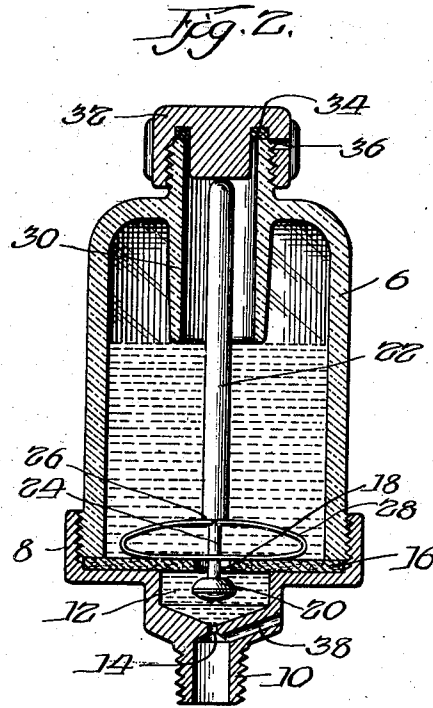
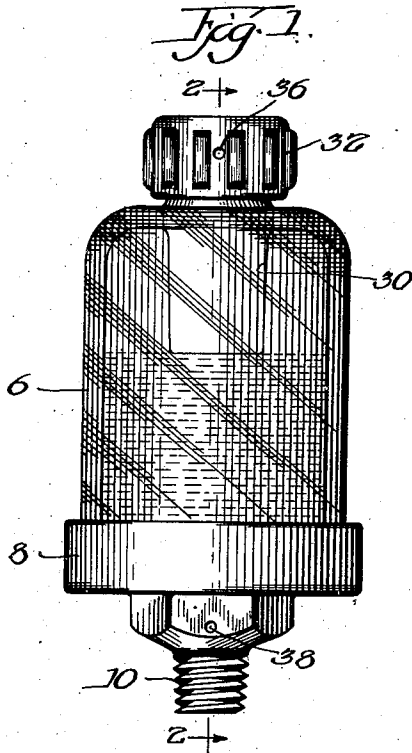
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OIL CUP

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OIL CUP

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1 Claim. (Cl. 184—84)

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My invention relates to oil cups wherein oil is discharged by thermal expansion of air contained within an air tight receptacle partly filled with oil. Oil cups of this class discharge a small quantity of oil upon each rise in temperature, such as may be produced by the normal daily range, or upon a temperature rise from other sources such as the heat generated by running machinery. They are also responsive in some degree to a drop in barometric pressure.

Oil cups of this class deliver a characteristic low rate of flow which is particularly desirable for lubricating printing presses, textile machinery, food processing machinery, or other machinery used in processing material which may be soiled, or otherwise impaired by contamination with excess lubricant.

As previously constructed, oil cups of this class have generally been too complicated and expensive for extensive use, or else they could not be filled conveniently and with assurance that over lubrication would not occur during the filling operation.

The general object of this invention is to provide an oil cup of the class described which is efficient in operation and which can be manufactured at low cost.

A more specific object is to provide an oil cup of the class described which can be refilled in a convenient manner, and without risk of flooding the bearing to which it is attached.

Other objects are to provide such an oil cup with a visible indication of the oil level and with means for maintaining a minimum volume of air in the oil receptacle.

A further object is to provide an oil cup of this class which comprises few parts, and which utilizes a construction susceptible of embodiment in a compact design of pleasing appearance. These and other objects will appear as the description proceeds.

In the drawing:

Figure 1 is an exterior elevation of the complete oil cup;

Figure 2 is a sectional elevation of the same, the section being made on the line 2, 2, in Figure 1;

Figure 3 is a plan view of the oil cup;

Figure 4 is an enlarged plan view of the spring shown in Figure 2; and

Figure 5 is an enlarged, longitudinal, sectional elevation of the spring shown in Figure 2.

The receptacle 6 is constructed of transparent, plastic material and is screwed into the metal base member 8, which is provided with screw

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threads 10 for screwing the oil cup to a bearing. The base member 8 is also provided with an oil well 12, and with a minute oil port 14, for permitting discharge of oil from the oil well 12. The oil port 14 is made sufficiently small to prevent concurrent passage of oil and air therethrough in opposite directions.

The fibre partition 16 separates the interior of the receptacle 6 from the oil well 12, and is extended radially to act as a gasket for sealing the receptacle 6 and the base member 8. The partition 16 has a concentric opening 18, the lower edge of which acts as a valve seat for the valve 20. The valve stem 22 is integral with the valve 20 and is provided with a constricted portion 24, forming a shoulder 26 for engagement with the spring 28, which tends to move the valve 20 upwardly to close the opening 18. The construction of the spring 28 is illustrated more clearly in the enlarged views, Figures 4 and 5.

The receptacle 6 is provided with an integral filling tube 30, which extends downwardly within the receptacle 6 to determine the maximum oil level of the oil contained therein. The closure 32 is screwed to the upper end of the filling tube 30, and is provided with a gasket 34, constructed of synthetic rubber or other yieldable material. The closure 32 is provided with an air discharge port 36 to permit escape of air from the filling tube 30 while the closure 32 is being screwed down to the position shown in Figure 2, in which position the closure 32 engages the valve stem 22 to hold the valve 20 open.

The operation of this oil cup is as follows: the oil cup, after being screwed to a bearing, and partly filled with oil and then closed by the application of the closure 32, is normally subjected to ambient temperature changes, so that an increase in ambient temperature raises the temperature of the air in the receptacle 6, thereby causing the air to expand slightly, and thus causing a small discharge of oil from the oil port 14. The oil thus discharged runs down into the bearing (not shown) by the action of gravity, as will be readily understood.

When the ambient temperature decreases, the temperature of the air in the receptacle 6 also decreases, and the resulting contraction draws external air in through the air opening 38, up through the oil port 14 and opening 18, and into the receptacle 6.

This oil cup is responsive to changes in ambient temperature in the manner described, and is also responsive to bearing temperatures and

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to variations in barometric pressure. Heat produced by a running bearing is conducted through the metal base member 8, and into the oil, and then to the air in the receptacle 6, to produce expansion thereof. Also, when the barometric pressure falls, the air in the receptacle 6 tends to expand a corresponding amount, and thereby discharges oil through the oil port 14.

This oil cup may be refilled by removing the closure 32, and by pouring oil into the filling tube 30. When the closure 32 is removed, the spring 28 moves the valve 20 upwardly and closes the opening 18 so as to prevent flow of oil through the oil port 14. After the oil cup has been replenished with oil, and while the closure 32 is being screwed in place, the escape of air through the air discharge port 36, as previously described, prevents compressing the air in the receptacle 6, and thereby prevents discharging an excessive amount of oil through the oil port 14.

The size of the oil port 14 is actually smaller than the size indicated in Figure 2. The size of the port as shown is enlarged somewhat so as to make its presence apparent. A hole one thirty second of an inch in diameter has been found to be quite satisfactory for the purpose. While the closure 32 is being screwed in place, the time interval between the opening of the valve 20, and the sealing of the gasket 34, is very short, so that the small amount of oil which can pass through the minute oil port 14 during this short interval is of no consequence.

The location of the spring 28 above the partition 16, with an opening of substantial size

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through the spring about the stem portion 24, allows a free and unobstructed path for the passage of air bubbles upwardly from the oil port 14. This would not be the case if the spring were located below the valve 20, and especially if a coiled spring were used. The tiny air bubbles entering the oil port 14, tend to cling to such a spring and produce foam at the bottom of the oil well 12. Under such circumstances air would be included with the discharge through the oil port 14, thereby reducing the rate of discharge and tending to make the oil cup inoperative in case the foam remains in close proximity to the oil port 14, to be drawn back into the oil well 12 when the air in the receptacle 6 contracts.

I claim:

In an oil cup, a receptacle for containing part oil and part air, said receptacle including a transparent body member having a filling opening therein, and a base member attached to said body member; a closure for said filling opening; an oil well in said base member, said oil well having a minute discharge opening therein, a partition separating the interior of said body member and said oil well, said partition having an opening therethrough, and said partition being constructed of relatively yielding material and extending radially to act as a gasket for sealing said body member and said base member; a valve for closing said opening in said partition; and means responsive to movement of said closure for opening and closing said valve.

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