

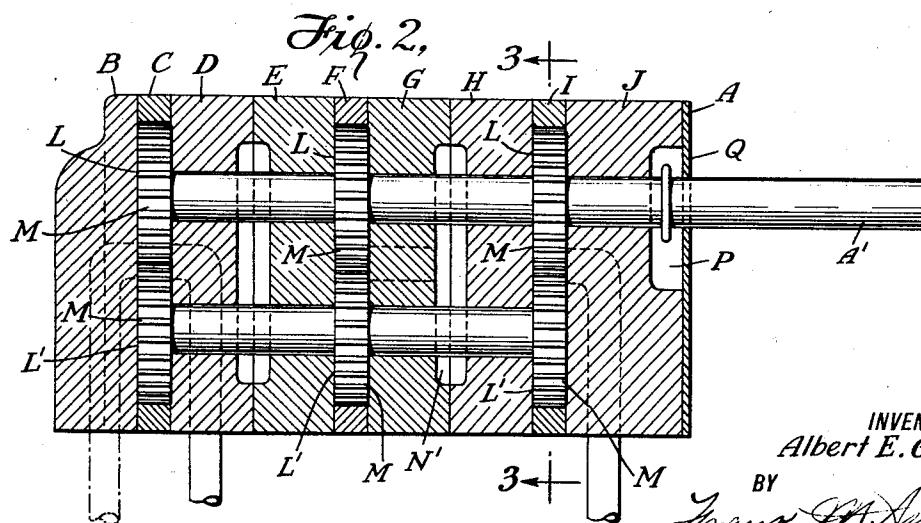
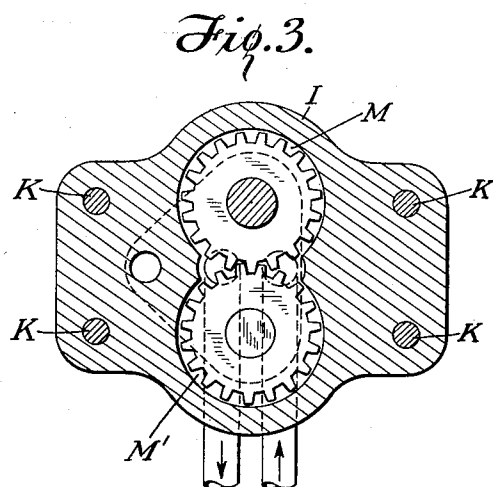
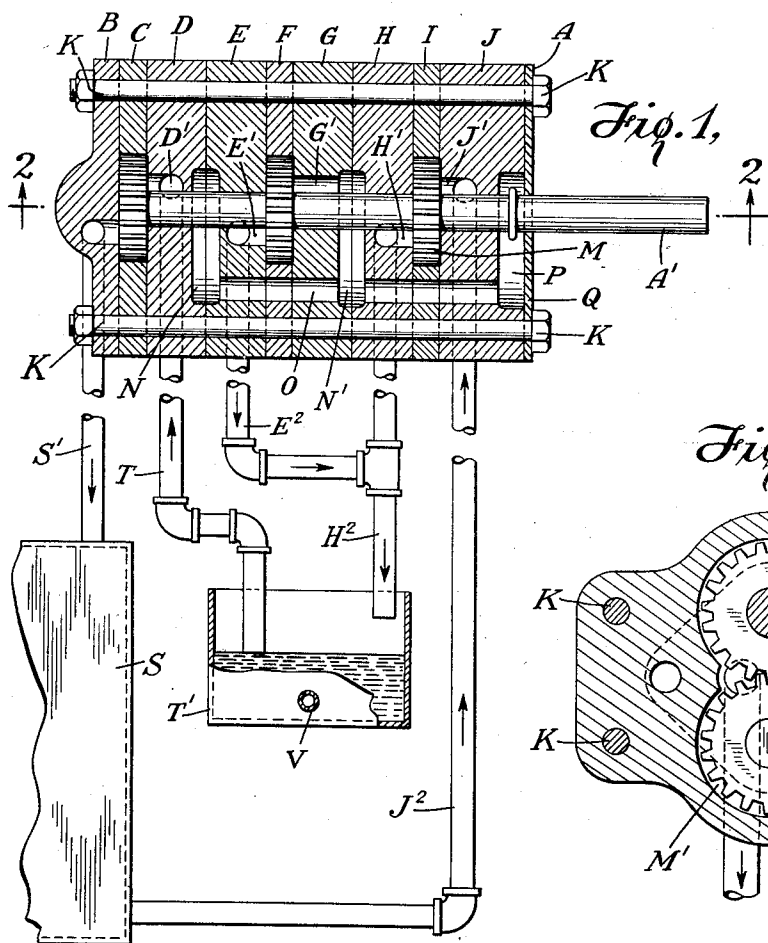
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APPARATUS FOR MAINTAINING UNIFORM OIL LEVEL

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APPARATUS FOR MAINTAINING UNIFORM OIL LEVEL.

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My invention relates to oil burning systems.

The object of my invention is to provide means for supplying oil from a main reservoir to an auxiliary reservoir and for maintaining a constant level of oil in said auxiliary reservoir and for returning all excess oil flowing into said reservoir, back to the main reservoir, the burners being supplied from the auxiliary reservoir.

In carrying out my invention I prefer to employ a multiple rotary gear pump, one set of gears constituting a pump, serving to pump oil from the auxiliary reservoir to the main reservoir, and one set serving to pump oil from the main reservoir to the auxiliary reservoir, the first named pump having a slightly greater capacity than the second pump. My construction also embodies a third gear pump which serves to prevent leakage of oil thru the bearings to the exterior of the casing and to draw oil thru said bearing to lubricate the same. All three pumps are driven in unison from a single driving shaft connected to a motor.

Referring to the drawings which form a part of this specification:

Figure 1 is a plan view partly in section of pumps for oil in which my invention is embodied, the pumps and bearings being disclosed in section on the line through the axis of the main shaft of the motor. The main and auxiliary reservoirs are also illustrated, and the pipe connections therefor.

Figure 2 is a vertical sectional view through the pump and gear bearings.

Figure 3 is a cross sectional view taken on line 3-3 of Figure 2.

A, indicates a sectional pump casing and A¹, the main shaft extending thru the casing sections, said sections being indicated by B-C-D-E-F-G-H-I and J, respectively, each having its sides formed with plane surfaces which abut and are held together by bolts and nuts K-K etc.

The sections C-F and I, are each formed with two circular chambers L and L¹ respectively, in each of which is located a tooth gear M, one above the other, and each pair meshed together to serve as a pump, the lower gears being driven by the upper ones mounted on the main shaft A¹. Chambers N and N¹ respectively are formed between the sections D and E and between G and H, thru which the main shaft extends, and these chambers are connected by a passage O,

which leads therefrom to the chamber P formed between the end plate Q and section J as illustrated.

The outlet for these chambers is thru a passage G¹, to the inlet side of the pump in section F, which discharges thru passage E¹ and thru pipe E², into the outlet pipe H².

The capacities of the pumps in sections F and I are practically the same but I prefer to make the gears slightly wider in the pump in section C to increase the capacity of this pump relative to that of the pump in section F. An end-cap 3, forms one side of the pump chamber of section C, and is provided with an outlet passage from said pump chamber which leads into the main reservoir S, by way of pipe S¹. A pipe T extends into the auxiliary chamber T¹, and its lower end is located at the height therein at which the oil level is to be maintained, and its opposite end is connected to the section D which is provided with an inlet passage D¹ in open communication with the inlet to the pump in section C. A pipe J² leads from the lower end of the main reservoir S, to the inlet passage J¹ leading to the inlet of the pump in section I, which pump discharges thru outlet passage H¹ into the upper end of the pipe H², thus discharging oil into the auxiliary reservoir, to supply the same. V, indicates the outlet to the auxiliary reservoir.

The operation is as follows:

Assuming the shaft A¹ to be driven at uniform speed by an electric motor, not shown, oil will be drawn from the main reservoir thru pipe J² to pump in casing I and discharged thru pipe H² into the auxiliary reservoir T¹, filling the same up to the level at which the open end of pipe T rests. The pump in section D, of greater capacity, will draw oil as fast as it reaches this level and discharge it back into the main reservoir. The pump in section F, will draw oil from chambers N, N¹ and P thru the shaft bearings, and discharge thru pipe E² to the auxiliary reservoir, the suction being such as to prevent any oil from flowing along the shaft thru the end-plate Q, to the outer side of the casing. It is understood that the capacity of the pump in section I is greater than the burners will use, and therefore the oil level may be maintained in the auxiliary reservoir.

It will be observed that there are no valves or parts to get out of order, the only mov-

ing parts being the shafts and gears of the pump, and since they are perfectly lubricated at all times, together with the bearings, the system is safe to operate and may be relied upon for continuous operation over long periods of time. It will also be observed that the pump serves as a valve and no oil can be drawn from the main reservoir when it is stopped. The main reservoir can be located underground, and the auxiliary reservoir located at a height sufficient to give proper pressure at the burners by gravity.

Having thus described my invention I claim as new:

1. In combination, a main reservoir, an auxiliary reservoir, two pumps driven in unison, one of which draws oil from the main reservoir and delivers to the auxiliary reservoir and the other of which draws oil from the auxiliary reservoir and delivers to the main reservoir, the inlet to said last named pump being located at the height in said auxiliary reservoir at which the oil level is to be maintained.

2. In combination, a main reservoir, an auxiliary reservoir, two pumps driven in unison, one of which draws oil from the main reservoir and delivers to the auxiliary reservoir and the other of which draws oil from the auxiliary reservoir and delivers to the main reservoir, the inlet to said last named pump being located at the height in said auxiliary reservoir at which the oil

level is to be maintained and having a greater pumping capacity than said first pump.

3. In combination, a main reservoir, an auxiliary reservoir, two pumps driven in unison, one of which draws oil from the main reservoir and delivers to the auxiliary reservoir and the other of which draws oil from the auxiliary reservoir and delivers to the main reservoir, the inlet to said last named pump being located at the height in said auxiliary reservoir at which the oil level is to be maintained said auxiliary reservoir having an outlet leading to an oil burner.

4. In combination, a main reservoir and an auxiliary reservoir, three pumps mounted in a casing on a common shaft and driven in unison, one of which draws oil from the main reservoir and delivers to the auxiliary reservoir, one of which draws oil from the auxiliary reservoir and delivers to the main reservoir, the inlet to said last named pump being located at the height in said auxiliary reservoir at which the oil level is to be maintained, and the third pump drawing oil from said first and second pump and delivering to said auxiliary reservoir, and serving to lubricate said shaft and prevent flow of oil to the exterior of the casing.

In testimony whereof I have affixed my signature.

ALBERT E. GRANT.