March 11, 1952 C. TIBEAU 2,588,778

OIL TANK HOPPER BY-PASS CONTROL

Filed Dec. 15, 1944

2 SHEETS--SHEET 1

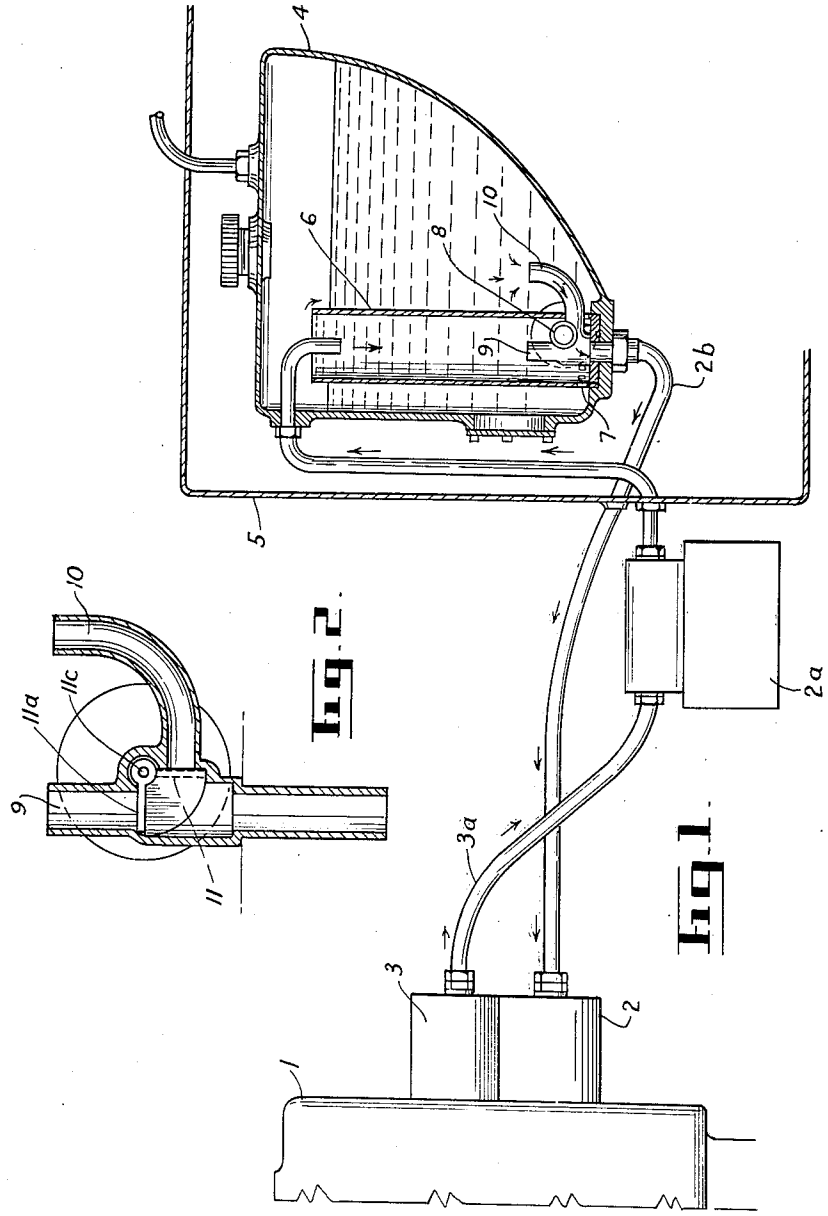


Fig. 1.

Fig. 2.

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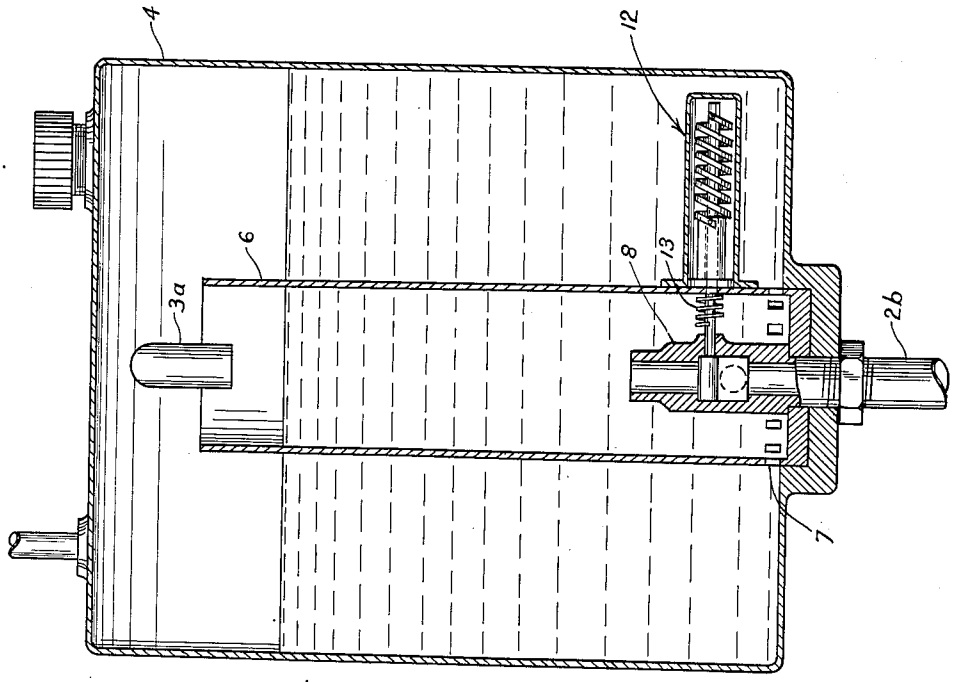


FIG. 1.

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OIL TANK HOPPER BY-PASS CONTROL

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2 Claims. (Cl. 137—21)

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My invention relates to an automatic oil tank hopper bypass control, operated by thermostatic means.

The object of my invention is to provide a device simple in construction which may be readily installed in any standard engine lubricating system to control the flow of oil to the engine from the oil supply tank which includes a by-pass control valve operated by thermostatic elements to maintain a constant flow of oil at standard viscosity.

A further object of the invention resides in controlling the pressure of the oil circulating in the lubricating system of the engine.

The invention eliminates the necessity of an air separator in the return line of a lubricating system or the use of a de-aerator in the oil supply tank.

It will be obvious with the above object realized that by maintaining a constant and adequate supply of oil in the lubricating system at a standard viscosity the engine will operate at a higher standard of efficiency and the life of the engine will be greatly extended.

With these and other objects in view which may appear as the description proceeds the invention resides in the novel construction, combination and arrangement of cooperating parts as hereinafter more specifically set forth, claimed and shown in the accompanying drawings forming part of this application and in which:

Figure 1 is a view showing a conventional engine lubricating system partly in section incorporating my invention.

Figure 2 is a section through the by pass control valve detailing the arrangement and operation.

Figure 3 is a section through the oil supply tank showing my invention and the method of operation.

Referring more in detail to the drawings in which similar reference characters designate corresponding parts through the several views it will be seen that the numeral 1 designates in part a conventional engine in which 2 designates an engine pressure pump installed in the supply line 2*b*. A scavenging pump 3, an oil cooling device 2*a*, and a return pipe 3*a* to the tank hopper is shown. The numeral 4 designates an oil supply tank surrounded by and a fire wall 5. Contained within the tank 4 and fitted to the bottom thereof is a tank hopper 6 in which ports or ducts 7 are located at the base. The numeral 8 designates a bypass control valve contained within the said tank hopper 6 and connected to the oil supply line 2*b*. The hopper intake duct 9 of the valve 8 is contained within the said hopper 6 while the bypass intake duct 10 is extended through the wall of the said tank hopper 6 into main oil supply tank 4. The valve gate 11*a* of the bypass control valve is operated automatically by a thermostat device regulating the ratio of oil passing through the intake ducts 9 and 10.

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A preferred form of thermostatic control is shown in Figure 3, in which the numeral 12 indicates a helical bimetallic thermostat mounted on the outer end of the valve gate shaft 11*c* which is enclosed in a tube located in the main oil supply tank. The shaft 11*c* is formed in two sections and the sections are coupled together by a helical bimetallic thermostatic coupling 13 disposed within the hopper 6, each thermostatic device operating to control the opening and closing of the ducts 9 and 10 of the by-pass valve 8.

From a cold or starting position the gate 11*a* of the valve 8 is in the position, as at 11, allowing the oil in the oil tank hopper 6 to circulate in the lubricating system via the valve duct 9 and the supply pipe 2*b*.

As the acceleration of the engine increases the temperature of the oil returning to the oil tank hopper 6 rises. The temperature of the oil in the main supply tank 4 will be influenced thereby and rise sufficiently to operate the thermostat 12 which rotates the shaft 11*c* of the valve 11*a*, closing the intake duct 9, and opening the by-pass duct 10, thus causing a fresh supply of oil from the main oil supply tank 4 to circulate in the lubricating system. The scavenged oil entering the top of the oil tank hopper 6 is retarded in its flow upon closing of the valve duct 9 and the oil backs up in the hopper and overflows from the upper end into the main supply tank 4. By slowing down the flow of the oil and causing it to overflow from the hopper into the tank 4 above the level of the oil therein allows the scavenged oil to be de-aerated before it is mixed with the fresh oil. The ports 7 around the bottom of hopper 6 provide communication between the lower end of the hopper and tank 4 allowing some of the fresh oil from tank 4 to enter the hopper at all times.

The thermostatic coupling 13 connects the two sections of the shaft 11*c* of the valve gate 11*a* and is designed to rotate the shaft 11*c* to operate the valve gate 11*a*, whenever a sudden rise in oil temperature occurs in the hopper 6, thus closing the duct 9, until such time as the thermostat 12 is influenced.

The process will repeat itself automatically during the running of the engine maintaining a constant supply of oil at standard viscosity.

It is believed that the construction and advantages of the structure shown may be apparent from the foregoing paragraphs taken in conjunction with the accompanying drawings without further detailed description.

While the preferred embodiment of the invention has been disclosed it is understood that minor changes in the details of construction, combination and arrangement of co-operating parts may be resorted to within the scope of what is claimed without departing from the spirit of the invention.

I claim:

1. An oil flow control device for engine lubricating systems comprising an oil supply tank, a hopper interposed in the oil flow line of the lubricating system and disposed in said tank, said hopper having its upper end in open communication with the tank above the oil level a by-pass valve disposed in the bottom of said hopper having connection with the oil flow line and provided with intake ducts communicating with said hopper and said tank, said valve including a pivoted gate to control the flow of oil through said ducts, a shaft for rotating said gate extending through the wall of said hopper, a helical thermostat mounted on said shaft within said hopper for rotating the shaft, and a second helical thermostat mounted on the outer end of said shaft within the oil supply tank for rotating said shaft, said thermostats normally moving the gate of said valve to close the duct communicating with said tank but upon an increase in temperature to move said gate to open the duct communicating with said tank and restrict the duct communicating with said hopper.

2. An oil flow control device for engine lubricating systems comprising an oil supply tank, a hopper interposed in the oil flow line of the lubricating system and disposed in said tank having its upper end in open communication with the tank above the oil level, a valve in the lower end of said hopper connected with the oil flow line and having separate ducts communicating with said tank and hopper, respectively, said valve having a movable gate operable to open and close said ducts, a thermostat in said hopper for operating said gate, and a second thermostat in said tank for operating said gate, said thermostats normally moving said gate to close the duct leading to said tank but operable upon an increase in temperature to move said gate to open the duct leading to the tank and close the duct leading to said hopper.

CLEMENT TIBEAU.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,017,572	Lund	Feb. 13, 1912
1,127,627	Johnson	Feb. 9, 1915
1,991,392	Jorgensen	Feb. 19, 1935
2,021,282	Blanchard	Nov. 19, 1935
2,133,394	Mortier	Oct. 18, 1938

FOREIGN PATENTS

Number	Country	Date
303,235	Great Britain	of 1929
330,053	Great Britain	of 1930