Fig. 7

Fig. 8

Fig. 9

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This invention relates to a device for keeping the oil in the crank case of a motor at a proper temperature during operation of the motor, the general object of the invention being to provide means for circulating some of the liquid from the cooling system of the motor through or around the oil in the crank case, with means for automatically controlling such circulation so as to keep the oil at a proper temperature and to evaporate moisture therein.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and wherein:

Figure 1 is a side view of a motor, showing the invention applied thereto.

Figure 2 is a vertical sectional view through the casing forming a part of the invention.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a view of the valve and a part of its stem.

Figure 5 is a view of the eccentric shaft for adjusting the thermostat.

Figure 6 is a transverse sectional view through a crank case having a jacket surrounding the same.

Figure 7 is a plan view of a crank case having a coil for the circulating liquid therein.

Figure 8 is a similar view, but showing a header coil in the crank case.

Figure 9 is a similar view, but showing a different type of coil from that shown in Figure 7.

In these drawings, the motor is shown at A and the pump for circulating the cooling fluid, is shown at B. In carrying out my invention, I provide means for circulating a part of the cooling liquid of the cooling system of the motor through or around the oil in the crank case and the tubes 7 and 8 are connected to these nipples, as shown in Figure 1. The jacket shown in Figure 6, the coils shown in Figures 7 and 9, and the headers and tubes shown in Figure 8, form a receiver part of the cooling liquid of the cooling system of the motor. A casing D is suitably supported at one side of the motor and contains a partition 9 which has a centrally arranged nipple 10 thereon which forms a guide for a rod 11. A thermostat 12 is arranged in the chamber 13 at one side of the casing and has one end connected to the rod 11 and the other end of the thermostat is connected to a rod 14 which passes into a guide 15 placed in a small chamber 16 at one end of the casing and the lower part of this chamber carries the packing means shown generally at 17, for a shaft 18 which has an eccentric stud 19 at its inner end engaging a notch 20 in the rod 14. Thus, by turning the shaft 18 by any suitable means, the rod 14 is moved longitudinally and thus the thermostat is adjusted.

A pair of partitions 21 divides the chamber to the right of the partition 9 into the chambers 22 and 23. Each partition 21 has an opening 25 therein, the walls of which are beveled to form a valve seat and a valve 26 is adjustable arranged on the rod 11, which passes through the three chambers, being threaded on a threaded portion 27 of the rod. A lock nut 28 holds the valve in adjusted position on the rod. A socket forming projection 29 is formed on the adjacent end of the casing or cylinder D and forms a guide for that end of the rod 11 which extends beyond the valve. This valve is formed with the beveled ends 26' for engaging the seats 25.

As will be seen, the valve 26 will engage one or the other of the valve seats when moved in one direction or the other by the thermostat.

The tube 7 is connected with the chamber 13 of the casing by a nipple 30, while the tube 8 is connected with the chamber 23 by a nipple 31. A tube 32 is connected with a nipple 33 in communication with the chamber 13 and this tube 32 is connected with the central part of the pump B, as shown at 34, while a tube 35 connects a part of the circulating system between the pump and the water jacket of the motor with a nipple 36 which is in communication with the chamber 22. A tube 37 connects with a nipple 38 in communication with the chamber 24 and this tube is connected with the outlet conduit of the water jacket of the motor, as shown at 39.

Thus it will be seen that when the motor is cold, the contraction of the thermostat 12 will move...
the rod 11 to a position where the valve 26 will close communication between the chambers 22 and 23 and open communication between the chambers 23 and 24. Then, when the motor starts up and the liquid in the cooling system begins to circulate therethrough, some of the hot water will flow from the coupling 39 through the tube 37 into the chamber 24 and then pass through the opening 25 into the chamber 23, from which the liquid will pass through the nipple 31 and tube 8 into the nipple 6 and thus flow either through the jacket 1 of Figure 6 or the tubes or coils shown in Figures 7, 8 and 9, according to which coil member or water jacket is being used and from this member, the liquid will flow through the tube 7 into the chamber 13 and will pass from the chamber through the tube 32 into the pump, which will force it into the jacket of the motor. In this manner, the oil in the crank case is heated by the heat of the liquid from the cooling system and when the oil becomes substantially the same temperature as that of the liquid, so it will take up no more heat from the liquid, the hot liquid passing through the chamber 8 will act to expand the thermostat which is, of course, adjustable to the desired temperature, and this expansion of the thermostat will move the rod 11 so that the valve 26 will engage the other valve seat and thus close communication between the chambers 24 and 23 and open communication between the chambers 23 and 22.

Then the circulation is as follows:

The cool liquid drawn from the bottom of the radiator by the pump will enter the tube 35 and pass through the nipple 36 into the chamber 22, through the opening 25 of the adjacent partition 21 into the chamber 23 and then pass through the nipple 31 and tube 8, through the jacket or coil in the crank case and then flow up through the tube 7 into the chamber 13 and pass from the chamber through the tube 32 back to the pump. Thus the cool liquid will act to prevent the oil in the crank case from being overheated, but if the crank case oil becomes too cool, the thermostat contracts again and thus moves the valve 26 to its first position so that the hot liquid from the cooling system will pass through the jacket or coil in the crank case.

Thus I have provided means for keeping the crank case at a proper temperature, and moisture, resulting from gasoline in the oil or from any other reason, is evaporated by the heating of the oil and there is no danger of the oil becoming too hot or too cool and the oil remains at the proper viscosity no matter what the atmospheric temperature is.

If desired, or necessary, a small cooling radiator may be placed in the conduit 35, between the connection 36 and the intake of cool water to the water jacket, for cooling the water to a lower degree than that of the water coming from the pump.

While the device is mainly designed for use on a motor, it can be used for automatically controlling temperature of water supplied to a bathtub or shower or the like by connecting the nipples 30 and 31 together by a conduit and connecting the nipple 38 to a supply of hot water, the nipple 36 to a supply of cold water, when the motor is started, the water jacket may be supplied with the desired temperature, the device will then operate to regulate the temperature of the water flowing from the chamber 13 as the thermostat 12 will operate the valve 26 to control the mixture of the hot and cold water flowing into the chamber 23 from the chambers 22 and 24, the operation of the thermostat being controlled by adjustment of the member 18.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. In a motor including its cooling system and crank case, a liquid container associated with the crank case, a liquid container associated with the crank case, a casing provided with a thermostat chamber, a hot water chamber, a cool water chamber and a valve chamber located between the two last mentioned chambers, a conduit connecting the thermostat chamber with one end of the container, a conduit connecting the valve chamber with the other end of the container, a conduit connecting the thermostat chamber with the inlet of the pump of the cooling system, a conduit connecting the cool water chamber with the conduit leading from the pump to the water jacket of the cooling system, a conduit connecting the hot water chamber with the conduit leading from the water jacket to the top of the radiator, a thermostat in the thermostat chamber, a valve in the valve chamber closing communication between the cool water chamber and said valve chamber when the thermostat is contracted and opening such communication and closing communication between the hot water chamber and the valve chamber when the thermostat is expanded.

2. In a motor including its cooling system and crank case, a container associated with the crank case, a casing provided with a thermostat chamber, a hot water chamber, a cool water chamber and a valve chamber located between the two last mentioned chambers, a conduit connecting the thermostat chamber with one end of the container, a conduit connecting the valve chamber with the other end of the container, a conduit connecting the thermostat chamber with the inlet of the pump of the cooling system, a conduit connecting the hot water chamber with the conduit leading from the pump to the water jacket of the cooling system, a conduit connecting the hot water chamber with the conduit leading from the water jacket to the top of the radiator, a thermostat in the thermostat chamber, a valve in the valve chamber closing communication between the cool water chamber and said valve chamber when the thermostat is contracted and opening such communication and closing communication between the hot water chamber and the valve chamber when the thermostat is expanded.

3. In a motor including its cooling system and crank case, a container associated with the crank case, a casing provided with a thermostat chamber, a hot water chamber, a cool water chamber and a valve chamber located between the two last mentioned chambers, a conduit connecting the thermostat chamber with one end of the container, a conduit connecting the valve chamber with the other end of the container, a conduit connecting the thermostat chamber with the inlet of the pump of the cooling system, a conduit connecting the cool water chamber with the conduit leading from the pump to the water jacket of the cooling system, a conduit connecting the hot water chamber with the conduit leading from the water jacket to the top of the radiator, a thermostat in the thermostat chamber, a valve in the valve chamber closing communication between the cool water chamber and said valve chamber when the thermostat is contracted and opening such communication and closing communication between the hot water chamber and the valve chamber when the thermostat is expanded.
with said cool water conduit and a branch conduit connecting part of the said third conduit with the conduit leading hot water from the cooling system to the radiator, a thermostat in the thermostatic chamber and valve means operated by the expansion of the thermostat for connecting said third conduit with the cool water conduit, said valve, when operated by the contraction of the thermostat, connecting said other end of the container with the hot water conduit through the branch conduit.

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