

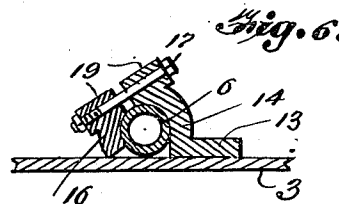
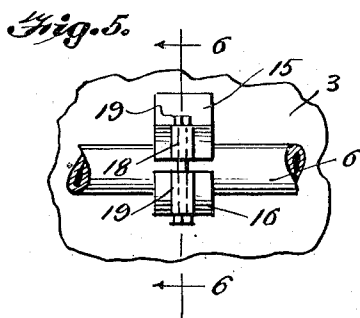
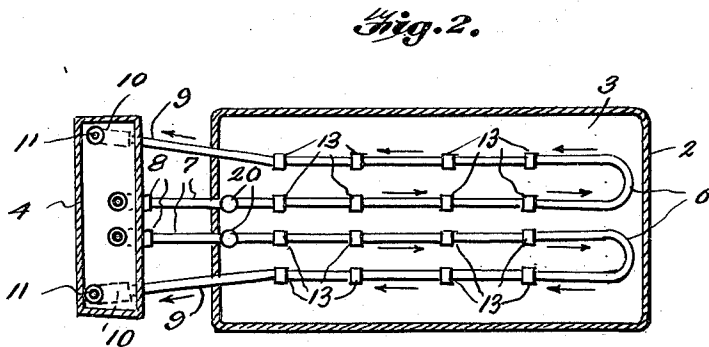
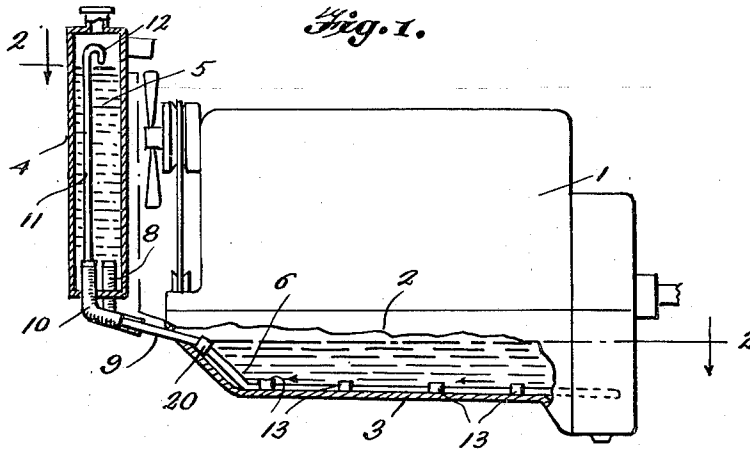
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A. BLATT
OIL COOLING SYSTEM

2,487,215

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2 Sheets-Sheet 1



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Fig. 3.

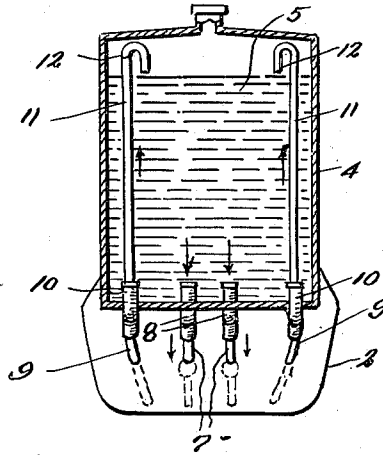


Fig. 4.

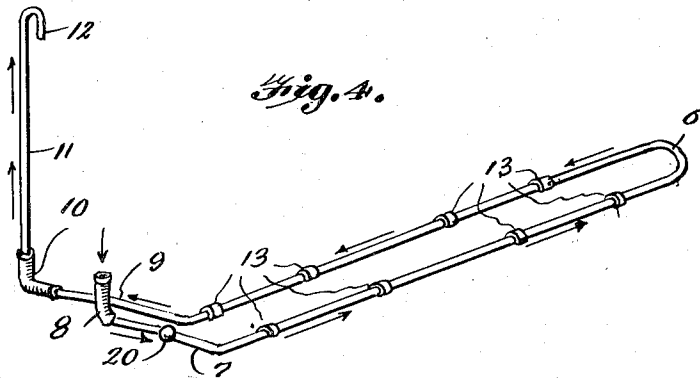
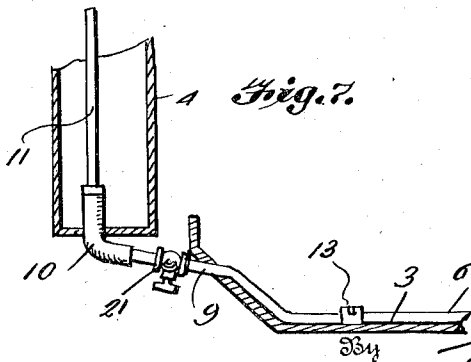


Fig. 5.



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OIL COOLING SYSTEM

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1 Claim. (Cl. 184—104)

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This invention relates to an oil cooling system for engines and it is one object of the invention to provide a cooling system of such construction that it may be associated with the crank case and radiator of an engine so that cooling fluid in the radiator may flow through a coil in the crank case and very effectively cool the oil and prevent overheating thereof.

Another object of the invention is to so arrange tubes in the crank case and radiator that when the engine is in operation, the cooling fluid will enter the tubing or coil from the bottom of the radiator and return in a heated condition to the top of the radiator above the fluid level of the radiator.

Another object of the invention is to provide a cooling system wherein a plurality of coils extend longitudinally in the crank case along the bottom thereof and in transverse spaced relation to each other so that during operation of the engine, heat will be taken up or absorbed throughout substantially the entire length and width of the crank case.

Another object of the invention is to provide an oil cooling system which is simple in construction, capable of being very easily incorporated in an engine and radiator of conventional construction, and not liable to become clogged or otherwise get out of order.

In the accompanying drawings:

Fig. 1 is a view partially in side elevation and partially in longitudinal section, showing an engine provided with the improved cooling system.

Fig. 2 is a longitudinal transverse sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken vertically through the radiator.

Fig. 4 is a perspective view of one cooling tube or coil.

Fig. 5 is a fragmentary view on an enlarged scale showing a clamp by means of which the tubing is secured to the bottom of the crank case.

Fig. 6 is a sectional view on the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary view showing a valve for controlling flow of cooling fluid through the tubing.

In the accompanying drawings, an engine, of conventional construction, is indicated in general by the numeral 1, and includes the usual crank case 2 having a bottom 3, there also being a radiator 4 through which water or other suitable cooling fluid 5, passes for cooling the engine.

The cooling system for oil consists of a pair

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of coils 6 formed of tubing and extending longitudinally in the crank case along the bottom thereof. The coils are preferably U-shaped, as shown in Fig. 2, and pass outwardly through the front end of the crank case. The intake ends 7 of the coils are connected with rubber couplings 8 mounted through the bottom of the radiator and projecting upwardly therein a short distance, and the discharge ends 9 of the coils are connected with similar rubber couplings 10 passing through the bottom of the radiator near opposite sides thereof. The couplings 10 are also engaged with outlet pipes 11 which extend vertically in the radiator with their upper ends projecting above the level of water in the radiator and formed with reverse bends 12 so that hot water flowing from pipes 11 will be directed downwardly toward water in the radiator. Since the end portions 7 and 9 of the coils 6 are connected with rubber couplings, vibration will not cause leaks and also, the coils may be disconnected when necessary. The tubes must be held firmly against the bottom of the crank case and for this purpose clamps 13 are employed. These clamps are preferably formed as shown in Figs. 5 and 6, and, referring to these figures, it will be seen that each clamp has a stationary jaw 14 formed with a foot 15 which is welded or otherwise firmly secured to the bottom 3 of the crank case. A movable jaw 16 cooperates with the stationary jaw and is drawn into gripping engagement with the tube or coil by a bolt 17 which passes through sleeves 18 and 19 carried by the two jaws at their upper ends. When the bolts are tightened the tubes will be firmly gripped and held against movement, and vibration cannot dislodge the coils. While it has been stated that clamps are used for firmly securing the coils, it will be understood that other means for holding the tubes may be employed.

When the engine is in operation, cold water flows from the bottom of the radiator through couplings 8 into the inlet ends 7 of the coils and this water flows through the coils and absorbs the heat from the oil in the crank case. Hot water flowing from the discharge ends of the coils flows through couplings 10 and upwardly through the pipes 11 to upper ends thereof where it is discharged through their bent ends 12 and returns to the radiator. Thermostat controls 20 are provided in the coils and located within the crank case where they are submerged in the oil and respond to temperature of the oil to control operation of the cooling system. If

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desired, valves 21 may be mounted in end portions of the coils outside the crank case so that they may be closed to cut off operation of the cooling system or partially closed to regulate flow of water through the coils and thus control the degree to which the oil will be cooled by the cooling system.

Having thus described the invention, what is claimed is:

In combination with an engine including a crank case and a vertically disposed radiator spaced forwardly from the front end thereof, a pair of U-shaped tubular coils extending longitudinally in the crank case against the bottom thereof in transverse spaced relation to each other with their arms projecting forwardly through the front end of the crank case in a horizontal plane below the radiator, a pair of flexible tubular couplings passing vertically through the bottom of the radiator in transverse spaced relation to each other and having their lower portions extending rearwardly and fitting tightly about front ends of inlet arms of the coils, a second pair of flexible tubular couplings passing vertically through the bottom of the radiator adjacent opposite sides of the radiator and having their lower portions extending rear-

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wardly and fitting tightly about front ends of the outlet arms of the coils, and a pair of pipes disposed vertically in the radiator adjacent opposite sides thereof and having their lower ends fitting tightly in upper ends of the last mentioned flexible couplings and their upper portions extending above the level of cooling fluid in the radiator and bent downwardly to form outlets for directing cooling fluid downwardly toward cooling fluid in the radiator.

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