THERMOSTATIC CONTROL FOR AUTOMOBILE RADIATOR OVERFLOW PIPE

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This invention relates to improvement in an automobile radiator and provides a device of this character embodying a thermostatic control for the radiator overflow pipe. It is obvious that in the more modern designing of the power plant for motor vehicles much attention and development has been devoted to the cooling system.

For obvious reasons the water pump for these systems is arranged so that the strenuous work of the pump frequently forces the water in the radiator to circulate so vigorously that a great portion thereof is discharged through the overflow pipe, and in this manner much of the water is wasted, thereby reducing the normal amount required.

This condition involves a serious loss, particularly in low temperature weather, when it is necessary to provide an expensive anti-freeze solution for the radiator.

In order to overcome this difficulty and provide a reliable and positive prevention from the loss of any amount of water in the radiator other than through the customary evaporation process, and likewise the primary intention of my invention is to provide an extremely simple and compact device that may readily engage the upper end of the overflow pipe and to remain permanently in this relation, and which is provided with expansion or thermostatic metal which supports a freely operative cap for the top of the device and is normally retained in a manner so as to completely close the upper end of the overflow pipe until at such time when the temperature of the water in the radiator will have reached from 192 to 188 degrees Fahrenheit. At this temperature the thermostatic metal will expand sufficiently to raise or open the cap of the device, thereby permitting instant passage of water through the overflow pipe and to final discharge thereof. This operation will continue until the temperature of the water shall decline to that of the normal temperature required.

Another very important advantage of this invention, is the fact that the overflow pipe being normally closed, no water is permitted to be wasted, as for example, when a motor car approaches a traffic signal, or is brought to an abrupt stop, the water in the circulating system, and partly within the radiator, surges forward and at every occurrence, a certain amount of the water is lost or wasted by passing into the upper end of the overflow pipe. This condition is entirely overcome by the present invention, as no doubt, will be readily appreciated.

Another decided advantage of this invention is the application of its use for winter driving, when expensive antifreeze fluids are used. Consequently, the aforesaid surging action would naturally cause waste of the expensive anti-freeze fluid as well as the water.

A still further advantage of this invention is the fact that the evaporation of any anti-freeze solution will be positively prevented at such time when the vehicle is inoperative or parked and the temperature of the cooling fluid is below 192 degrees Fahrenheit adjacent to the thermostatic control associated with the overflow pipe.

The invention possesses further advantages, which will become readily apparent during the course of the following detailed description, illustrated throughout the accompanying drawing, and more specifically pointed out in the appended claims.

With reference to the drawing:

Figure 1 is a transverse section of the device through the center thereof, and showing the same normally secured to the overflow pipe.

Figure 2 is an elevation of the complete invention.

Figure 3 is an elevation of the invention showing the same in the act of operation.

Figure 4 is a transverse section of the invention disclosing a modified form thereof.

Figure 5 is a top plan view of the complete invention.

All of the views in the drawing are drawn to the scale of approximately twice size.

The invention comprises a cylindrical body having the upper and lower portion thereof open as indicated, and composed of any material and thickness most suitable for this purpose. Said body being provided with an inside diameter of adequate proportion so as to render same susceptible of telescopic detachable engagement with overflow pipe A.

Thermostatic expansion metal 2 is provided and of the formation as shown. This metal is substantially supported by means of one end thereof being deflected and forming thereby foot 3, and said foot being secured to body 1 by soldering, welding, or in any approved manner. The opposite end of metal 2 is deflected in a manner so that flat portion 4 is formed and which is adapted to likewise engage the top surface of closure cap 5 and being retained in this relation by rivet 8.

In order to prevent the possibility of the water siphoning to within pipe A when the device is closed as in Figure 1, packing 7 is provided inter-
mediate pipe A and body 1. This packing is preferably composed of tire tape or the equivalent thereof, or in fact any material not susceptible to deterioration by water or the solution of water and chemicals.

With reference to Figure 1 it is understood that the spring tension of metal 2 will retain closure cap 5 normally in contact with the top of body 1, thereby closing pipe A. When the temperature of water B shall have attained from 192 to 195 degrees Fahrenheit, metal 2 being submerged in same, will expand sufficiently so as to elevate or open cap 5 to approximately the position as shown in Figure 3 and accordingly admitting of the uninterrupted passage of water B from within the radiator through pipe A to final discharge thereof.

The correct working temperature of the water of an automobile motor is from 160 degrees to 170 degrees F., and it must be thereby understood that this invention remains at a positively closed position at all times during said normal temperature, unless there is some difficulty within the motor to cause an unexpected and rapid rise in temperature of the water, and inasmuch as if this condition should prevail it would require a reasonable time before the pressure would be so great as to do any material damage. Such a condition is very unusual and is not frequently known in the more modern types of vehicle power plants.

It is obvious from the foregoing explanation of the operation of the device that when the temperature of the water declines to a temperature below 192 degrees Fahrenheit, metal 2 will contract to the extent that cap 5 will be automatically moved to a closed position, as in Figures 1 and 2, and this operation automatically repeating itself.

Referring to Figure 4, a modified form of the invention provides that portion 3 of metal 2 be secured to overflow pipe A, and cap 5 being adapted to perform the same function as in the major structure of the invention. In this manner the necessity of the use of body 1 and packing 7 would be obviated, and the device being constructed in coordination with the overflow pipe.

It may be added that if necessary, a provision may be incorporated in cap 5 whereby a packing may be disposed between the bottom of said cap and the top of body 1 and pipe A, so as to insure a water-tight joint for said elements.

Having thus described my invention, what I claim as new is:

1. In combination with an automobile radiator overflow pipe, a thermostatic control including a cylindrical body, said body adapted to telescopecally engage said overflow pipe, packing means therebetween, a closure for the top of said body, said closure comprising a detachably engaged cap, and means interconnecting the cap with the body and automatically operative for opening and closing said cap relative to the aforesaid body.

2. In combination with an automobile radiator overflow pipe, a thermostatic control including a cylindrical body, said body adapted to telescopecally engage said pipe, a thermostatic element, and a detachably engaged cap for said body, said cap being secured to the thermostatic element, the latter being secured to the body in a manner so that the cap will open and close said body responsive to expansion and contraction of said element, which is governed by the temperature of the water in the radiator.

3. In combination with an automobile radiator overflow pipe, a thermostatic control including a body adapted to detachably engage said pipe, a closure cap for said body, and thermostatic means interconnecting the closure cap with the body for automatically opening and closing said cap relative to said body and responsive to the variable temperature of the water within the radiator.

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