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H. STEIN
ANNULAR CORE AUTOMOBILE HEATER
WITH FAN AND SUPPORT THEREFOR

2,639,124

Filed May 16, 1951

2 Sheets-Sheet 1

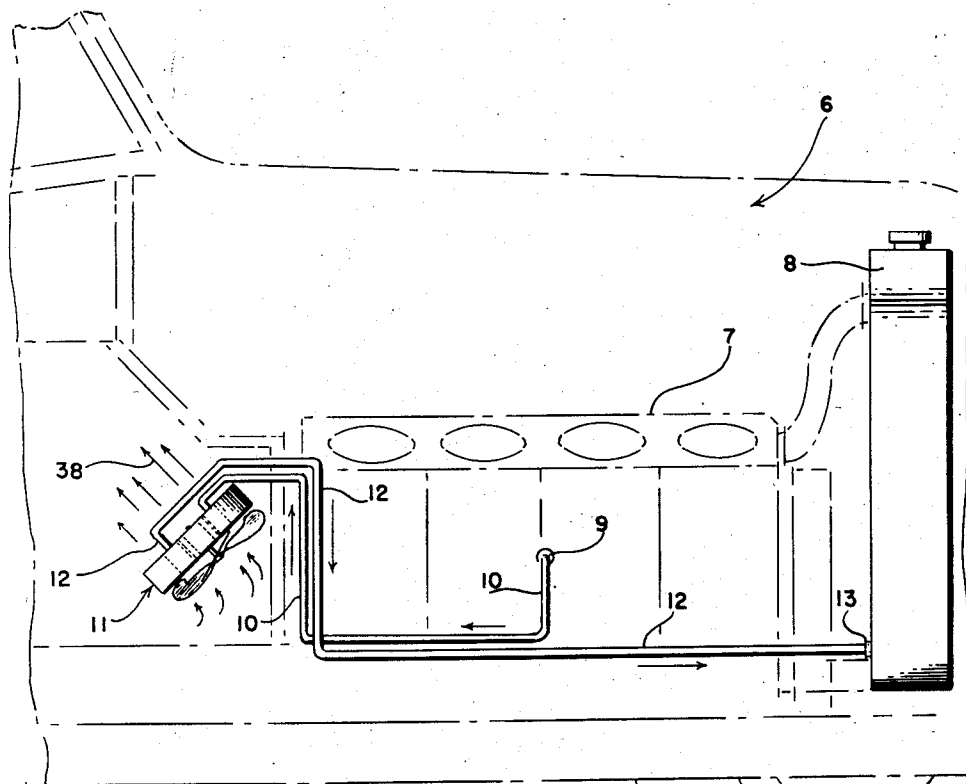


Fig. 1.

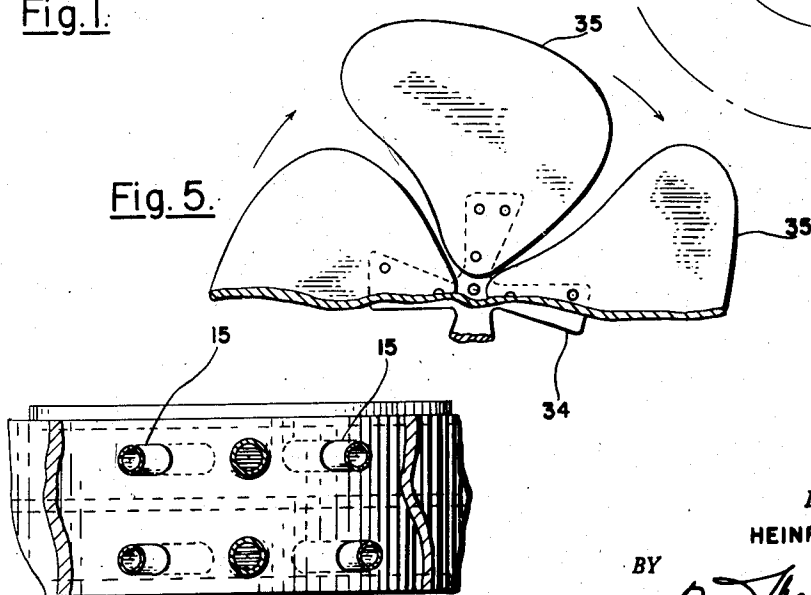


Fig. 5.

Fig. 4.

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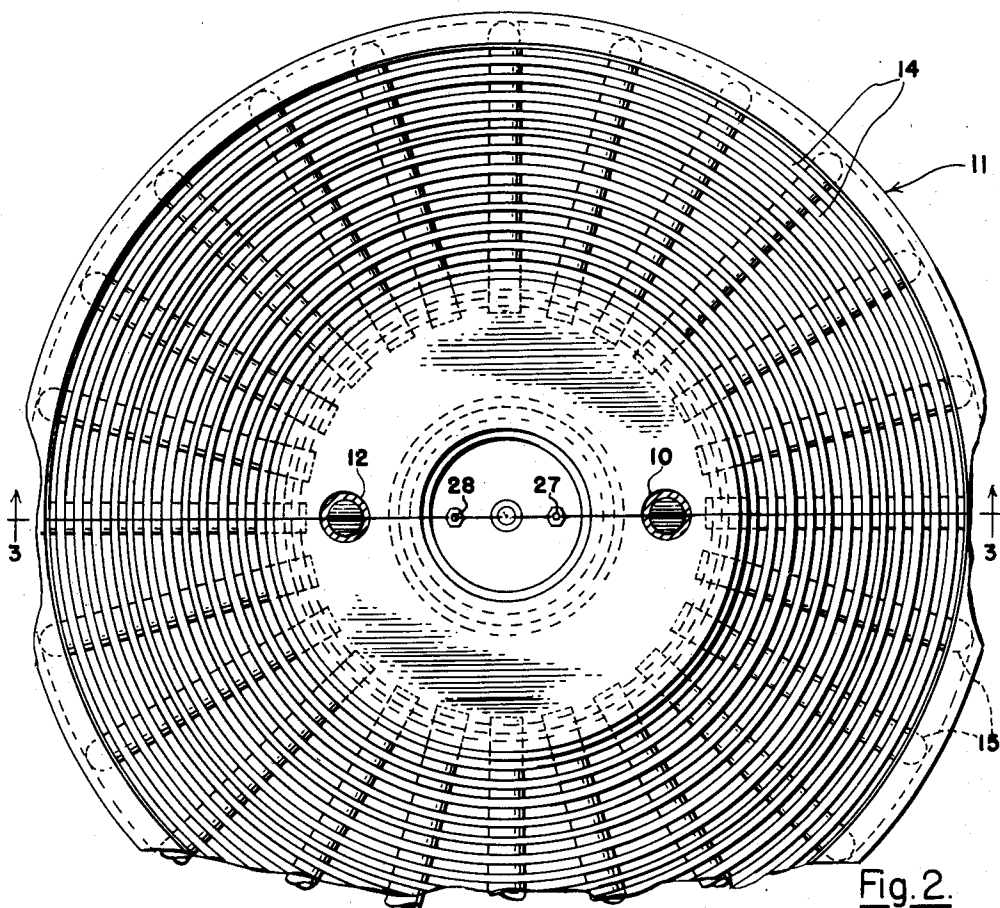


Fig. 2.

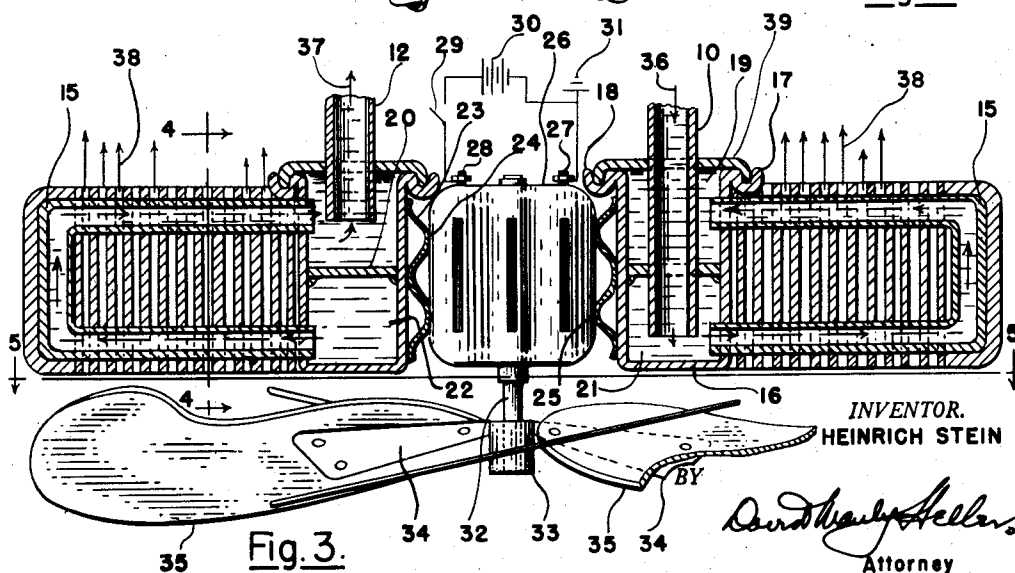


Fig. 3.

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ANNULAR CORE AUTOMOBILE HEATER
WITH FAN AND SUPPORT THEREFOR

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Application May 16, 1951, Serial No. 226,620

1 Claim. (Cl. 257-137)

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My invention relates to heaters primarily used in connection with vehicles equipped with liquid cooling systems, utilizing the circulating liquid for cooling the engine to be circulated first through the heater comprising my invention.

This invention is an improvement over the one disclosed in my issued patent for Automobile Water Circulating Heaters issued May 23, 1950, under Patent No. 2,508,729.

An important object of my invention is to provide a liquid circulating heater, which utilizes the circulating liquid used for cooling the engine of a vehicle; the said heater being so disposed as to radiate heat to the interior of a vehicle, simultaneously providing the additional function of acting as an auxiliary cooler for the liquid, before it is passed to the radiator of the vehicle for ultimate cooling prior to its recirculation through the engine.

A further object of my invention is to provide a circulating liquid heater of the aforementioned character, which is equipped with hot air blower means for circulating the hot air forcefully within the interior confines of a vehicle.

A further object of my invention is to provide a circulating liquid heater of the aforementioned character provided with a central opening furnishing a housing for prime mover means connected to a blower fan.

A still further object of my invention is to provide means for retaining frictionally and firmly the said prime mover means in assembly within the central core of the circulating water heater, at the same time holding or gripping the said prime mover in line or circumferential contactual relationship so as to prevent the said prime mover from becoming unduly heated and thus maintain the same cool.

Other objects and advantages of my invention will become clarified as the description is read, and will elucidate the improvements indicated on the accompanying drawings. Like symbols are used to designate like parts in the various figures, in which:

Fig. 1 is a schematic view showing my invention connected underneath the hood of a vehicle, shown in phantom lines, showing the connections of the radiator and the engine cooling jacket connected to the heater.

Fig. 2 is a top view of the heater comprising my invention.

Fig. 3 is a cross-sectional view taken substantially on the lines 3-3 of Fig. 2.

Fig. 4 is a cross-sectional view taken substantially on the lines 4-4 of Fig. 3.

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Fig. 5 is a fragmentary view of the blower, or fan means, and is a view taken substantially looking in the direction of arrows 5-5 on Fig. 3.

Referring to Fig. 1, my invention is generally designated 11, and is shown mounted underneath the hood of a vehicle generally designated 6, the said vehicle being provided with a power-plant or engine 7, and a liquid cooling radiator 8, part of the circulating system for cooling the engine or power-plant 7.

At the threaded boss, 9, the inlet pipe 10 is connected leading into the inner compartment of the heater 11, the liquid traversing through the liquid heater and subsequently passing through the connection or piping 12, connected to the nipple 13, at the base of the radiator structure 8. Thus the liquid is circulated both through the radiator 8 and primarily through the heater 11, effectuating a pre-cooling effect, thereby relieving the radiator 8 and preventing its becoming overheated.

The heater structure, per se, is composed of a series of tubular vane elements 14, which are suitably bored in order to receive the "U-shaped" conduits 15, radially positioned about the center of the heater.

The outer perimetral shell of the heater serves to hold securely in place the "U-shaped" conduits 15. The core structure 22 is of "U-shaped" cross-sectional configuration, designated 16, and provided with the lips 17 and 18 at the top thereof, in order to receive the cap 39 with mating lips engaging the lips 17 and 18 so as to form a sealed arrangement.

Centrally of the element 16 a partition 20 is secured, which is of coronal configuration and which subdivides the inner chamber of the element 16 into compartments 19 and 21.

Through the cap structure 39, on the one side, the inlet 10 is secured to the heater, also passing through the partition, forming the inlet through which the liquid enters at 36.

The outlet 12 is secured to the cap 39 and has its mouth entering the compartment 19, whereas the inlet has its mouth terminating within the compartment 21. Thus, the liquid, after its circulation through the "U-shaped" conduits 15, leaves the heater 11 at the outlet as indicated by the arrow 37.

The core element 22 serves to house the spring-like resilient element 23, having a series of promontories 24 and 25, so as to engage the outer surface of the motor 26 in line contactual relationship so as not to heat up the said motor and permit the same to remain cool for its efficient operation.

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The motor 26 is frictionally held by the resilient element 23, which, at the same time, prevents it from becoming overheated, by the heater. The motor or prime mover 26 has an extension shaft 32 on which is mounted the bushing 33 of the spider 34 to which are secured by riveting, or any other fastening means, the blower or fan blades 35.

The motor is connected to a source of supply 30, the battery of a vehicle, one terminal thereof 27 being grounded at 31, the other terminal 28 being connected to the battery or source of electrical power 30, a switch 29 being interposed for optional operation of the motor 26 and the incidental blower fan 35.

When the blower is in operation, after closing the switch 29, the hot water generated or heated by the operation of the engine, passes through the heater and forces heat waves 38, as indicated by the arrows, to be circulated through and within the interior confines of the vehicle, generally designated 6.

The advantages of this heater structure, over the patent hereinabove mentioned and designated, are that the forced blower feed is utilized to more quickly circulate the heated air currents passing through the heater, at the same time more effectively relieving the cooling load of the radiator 8, simultaneously preventing overheating, at the same time providing means for retaining the motor 26 without overheating the same; the entire unit being quite compact and not occupying valuable space within the interior confines of the vehicle for accommodating passengers.

An important feature of the invention is the annular element 16, which provides the connections for the inlet and the outlet, separating the same into two compartments, and at the same time, providing a cored opening for a prime mover to be compactly retained therein.

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Another feature resides in the element 23, for frictionally retaining the prime mover and at the same time providing a forced feed blower means for the heated air currents passing through the openings in the water circulating heater, preventing the prime mover from becoming overheated, and also permitting a more effective distribution of the heated air currents, quickly and rapidly, within the interior confines of an automobile or a passenger vehicle.

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 claim.

Having thus disclosed and revealed my invention, what I claim as new and desire to secure by Letters Patent, is:

A blower radiating liquid circulating heater, comprising in combination liquid circulating radiator means provided with a central core structure, corrugated and resilient heat insulating means secured within the said central core structure, prime mover means retained frictionally within the confines of the said corrugated and resilient heat insulating means, and blower fan means mounted below the said prime mover to dissipate the heated air currents from the said circulating heater.

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