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HEAT DISSIPATOR DEVICES FOR REFRIGERATION
SYSTEMS IN AUTOMOBILES
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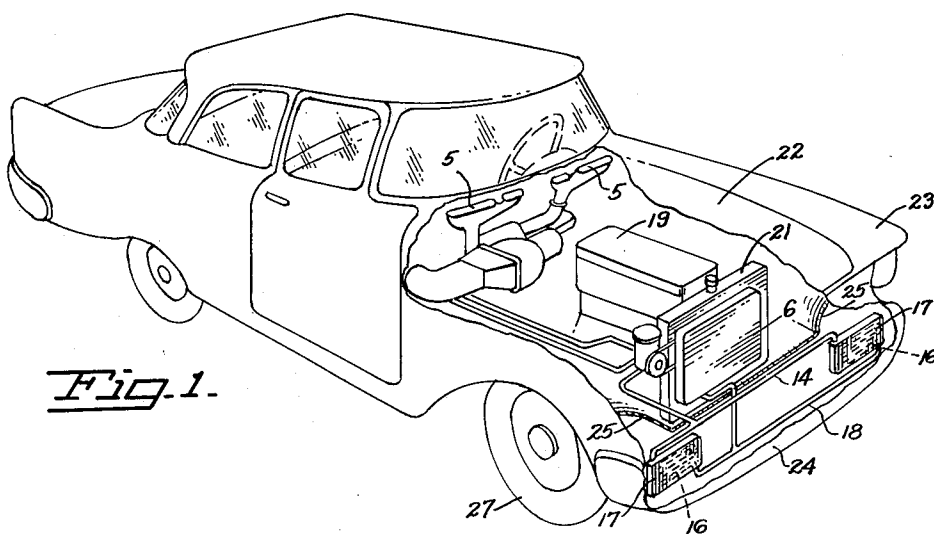
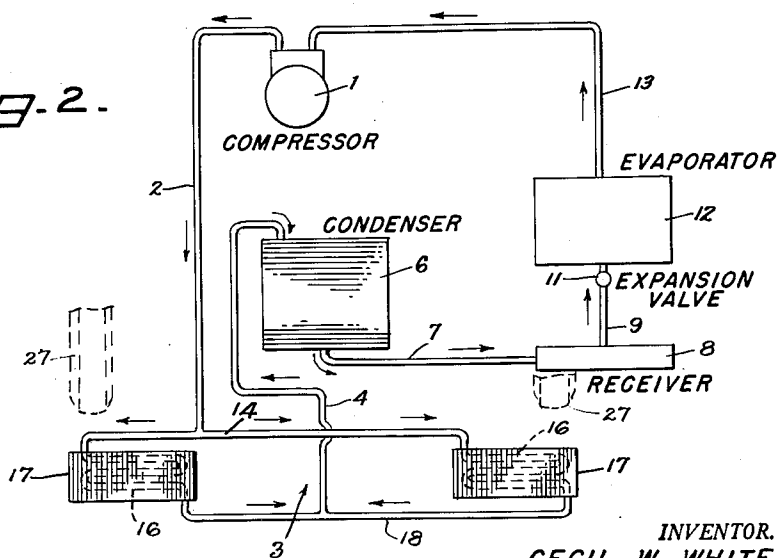


Fig. 2.



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1

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This invention relates to heat dissipator devices for refrigeration systems in automobiles.

The principle of operation of the usual refrigeration system is based on the theory that temperature is a measurement of heat. Heat is a form of energy and when an object cools, it does not absorb cold, but rather it loses heat to a colder object or substance nearby. Any refrigeration system usually has five basic parts. They are the compressor, condenser, receiver, expansion valve and evaporator. The Freon gas under low pressure is drawn into the compressor where it is compressed to a high pressure. The process of compressing also heats the gas. The hot Freon gas then flows into the condenser where it cools by giving off heat. As the Freon gas cools while passing through the condenser, it condenses into a liquid of high pressure and the liquid passes into the receiver. The receiver acts as a reservoir to supply liquid to the expansion valve. The expansion valve meters Freon into the evaporator where low pressure is maintained by the suction of the compressor. As the Freon enters this low-pressure area, it will immediately begin to boil by absorbing heat from the surrounding area. As the liquid Freon passes through the evaporator it will continue to boil until all the liquid has changed to a vapor at low pressure. From the evaporator the Freon gas is drawn back into the compressor to repeat the cycle.

The hot Freon gas is conducted from the compressor to the condenser through conduits which sometimes are in the form of coils and in the prior art in air conditioners or refrigerator systems, in automobiles, these coils were located immediately adjacent to the radiator of the engine and within the closed space around the engine and as the hot gas gives off heat to the metal of the coils and conduits, it also heats the air passing to the condenser and thus increases the temperature around the radiator and thereby unfavorably affects the operation of the engine by reason of raising the temperature of the cooling system of the engine. It is the primary feature of the present invention to provide larger heat dissipating areas which are remote from the radiator of the engine so as to dissipate heat more efficiently and in a direction away from the engine and thereby prevent the increase of the operating temperature of the engine.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claims; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

FIG. 1 is a perspective view of an automobile showing the relative location of the elements of the refrigeration system and particularly the heat dissipator coils with reference to the radiator and the engine in the automobile.

FIG. 2 is a diagrammatic view showing the relative arrangement of the dissipating coils in the system.

2

As shown in FIG. 2, the refrigeration system includes a compressor 1 which discharges the compressed refrigerant such as hot Freon through a conduit 2 to the heat dissipator system 3, from which latter through a return conduit 4 the hot gases are conveyed into a condenser 6. The condensed Freon is conducted from the condenser 6 through a conduit 7 into a receiver 8 from which through a conduit 9 the Freon passes through an extension valve 11 of the usual type into the evaporator 12 from which latter it is sucked through a conduit 13 into the compressor 1. This refrigeration system cools the air discharged through the air conditioner outlets 5 into the automobile.

A novel feature of the herein invention pertains to the heat dissipator system 3 which in the present illustration includes a distributing conduit 14 which extends laterally across the end of the conduit 2, and along the front end or front panel of the body of the automobile. At each end of the distributing conduit 14 is a dissipator coil 16 suitably provided with suitable fins 17. Each dissipator coil 16 discharges into a lateral return conduit 18 connected to the return conduit 4 leading to the condenser 6.

Another novel feature of the invention is the location of this distributor system 3 with regard to the engine of the automobile. As shown in FIG. 1, the usual engine 19 is mounted at the forward portion of the automobile and has a radiator 21 in front thereof which is in the vicinity of the usual cooling fan, not shown. On opposite sides of the hood 22 of the automobile there are fenders 23. A transverse front panel or shield 24 extends between the forward ends of the fenders 23 and in front of the front wheels 27 of the automobile. A separating partition 25 under the engine and over the fenders separates the space for the engine from the open space beneath the engine. As it is shown in FIG. 1, the distributing conduit 14 extends transversely of the automobile and forwardly and downwardly spaced from the radiator 21 and under and along the front shield 24 and beneath the partition 25 so that the respective dissipator coils 16 are located at the farthest opposite forward areas near the forward ends of the fenders 23 and within the outside ends of the shield 24 just inside of the planes of the respective front wheels 27 and in the exposed space beneath the partitions. The return conduit 18 extends also laterally along the shield 24 to the return conduit 4 which latter leads to the usual condenser 6.

The hot Freon, or other suitable refrigerant, therefore, is conducted away from the radiator 21 and into open or exposed areas spaced from the radiator 21 both forwardly of the automobile and laterally outwardly toward the sides of the automobile so that the respective dissipator coils 16 are outside the closed space around the engine and nearer to the front wheels 27 of the vehicle than to the radiator 21. As a result the heat which is dissipated through these coils 16 and their fins 17 are exposed and will liberate the heat remotely from the radiator 21. Additional air currents created by the wheels 27 and the travel of the automobile accelerate the dissipation of heat from the exposed coils 16 and fins 17. This prevents to an extent the raising of the engine temperature by the heat liberated from the hot Freon gases. In addition this arrangement permits the lowering of the head or discharge pressure in the distributing and dissipating system of the air conditioner refrigerator system which improves the efficiency of the air conditioner system. As a further result of this arrangement the horse power utilized from the engine for the purpose of operating the air conditioner refrigeration is decreased.

As an example, a comparative test made on the same automobile showed the following results: prior to the

3

installation of the dissipator coils under the front fenders of the automobile, at 90° Fahrenheit ambient temperature at 60 miles per hr. travel, the engine temperature was 190° F. with a discharge pressure of 200 p.s.i.g. and suction of 48 p.s.i.g. After installing the special dissipator coils under the front fenders as aforesaid the same test was made and it showed at 95° F. ambient temperature and at 60 miles per hr. an engine temperature of 160° F. and discharge pressure of 150 p.s.i.g. and suction of 38 p.s.i.g.

The invention herein described, therefore, accomplishes the result of saving power, as well as it dissipates heat away from the cooling system of the engine itself and thereby reduces the heat in the cooling system of the engine and increases the power of the engine because it decreases the friction previously caused by insufficient cooling of the engine parts due to the additional heat conveyed to said cooling system by the previous arrangement of conduits and coils leading to the condenser.

I claim:

1. In a refrigerating system for an automobile having an engine and a cooling system for the engine, said refrigerating system being in part in the enclosure around said engine, the combination with the compressor and a condenser, of said refrigerating system located within the enclosure for said engine; of a pair of heat dissipating coils interconnected in the conduit between the compressor and the condenser, said dissipating coils being spaced from each other and from said engine on the automobile at such a distance forward of the cooling system of said engine and laterally toward the respective sides of the automobile that heat is dissipated by said coils remotely from the cooling system of the engine.

2. The invention defined in claim 1, and refrigerant distributing conduits branching from the conduit of the compressor of said refrigerating system, one branch to each dissipating coil, return coils leading from each dissipating coil toward the other, and connected together, and a common return conduit from said return conduits leading to the condenser.

4

3. In an automobile having an engine and a cooling system for the engine, and fenders spaced from the opposite sides of said engine and forwardly of the same, and a compartment for the engine formed between the fenders; a refrigerating system for the automobile including a compressor and a condenser within said compartment, a heat dissipating element at the forward end of each fender spaced laterally and forwardly of the cooling system of said engine, and outside of said engine compartment whereby to dissipate heat remotely from the cooling system of the engine; distributing conduit leading to each heat dissipating element and being connected to the discharge end of said compressor, and return conduits from each heat dissipating element, said return conduits being connected together and to the condenser of said system.

4. In an automobile having fenders terminating forwardly in a front shield spaced forwardly and below the engine compartment of the automobile, and forwardly of the wheels of the automobile, a refrigerating system for the automobile including a compressor and a condenser, a heat dissipating coil exposed substantially in front of each front wheel, and spaced forwardly and laterally on each side with respect to said engine compartment, and being outside of said engine compartment, distributing conduits to conduct a refrigerant from the compressor to each of said heat dissipating coils, and return conduits connected to the condenser and leading from each heat dissipating coil, each heat dissipating coil being exposed to air circulation created by the travel of the automobile so as to dissipate heat outside of and remote from said engine compartment.

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