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E. D. ROHEN
VEHICLE BODY HEATER
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Fig. 1.

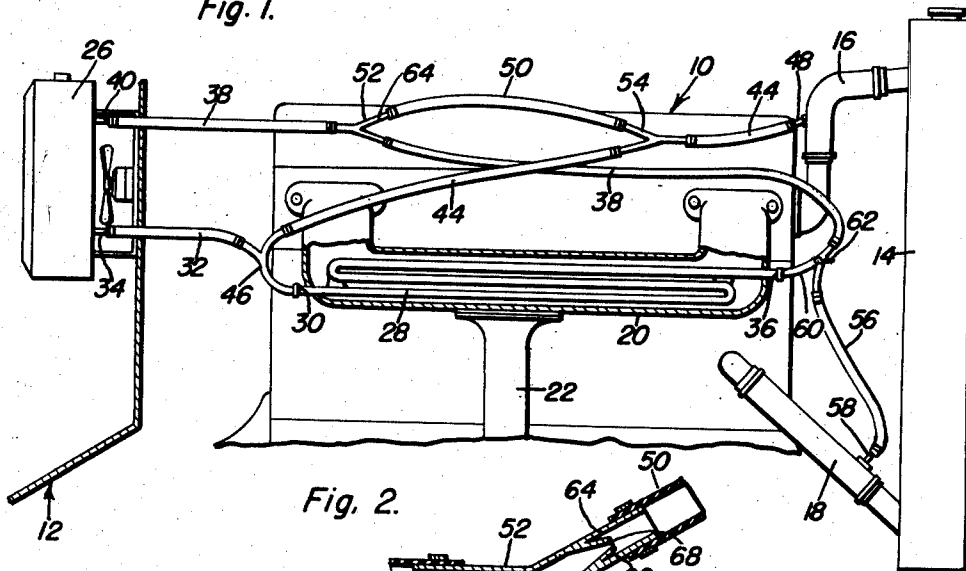


Fig. 2.

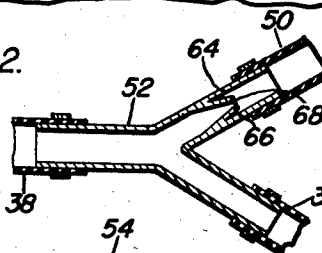


Fig. 4.

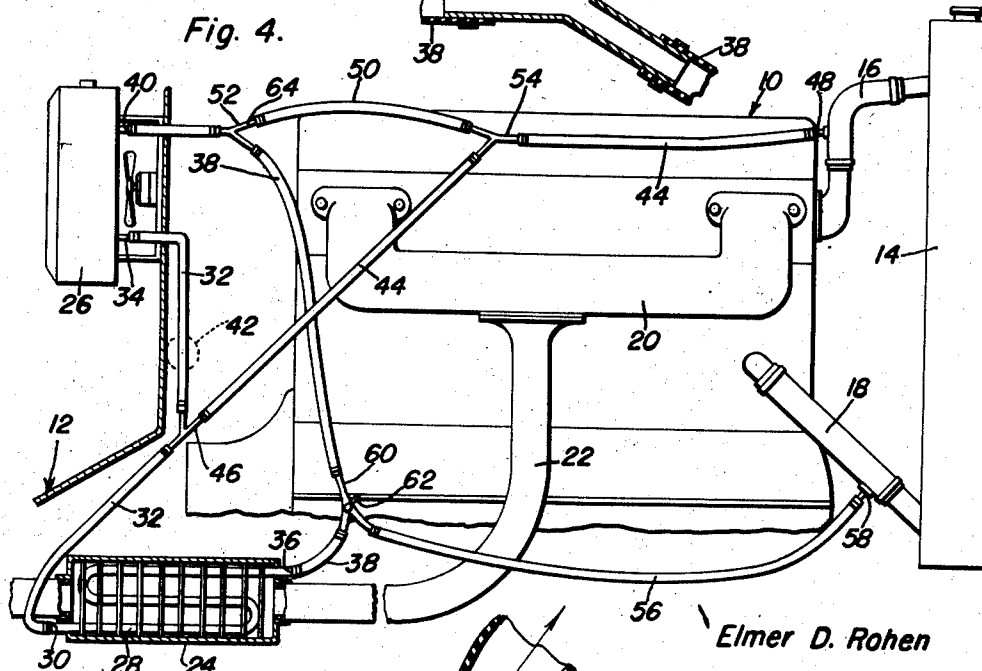
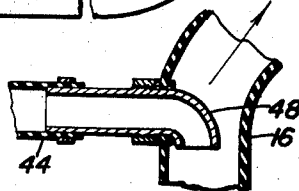


Fig. 3.



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VEHICLE BODY HEATER

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1 Claim. (Cl. 237—12.3)

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This invention relates to new and useful improvements and structural refinements in heaters for bodies of vehicles equipped with internal combustion engines, such as for example, automobiles, buses, airplanes, et cetera, and the principal object of the invention is to assure the provision of adequate heat shortly after the internal combustion engine commences to operate.

This object is achieved by the provision of a water heating system including a coil installed in the exhaust system of the internal combustion engine, some of the advantages of the invention residing in its simplicity of construction, in its efficient and dependable operation, and in its adaptability for use in association with internal combustion engines of different types of vehicles.

With the above more important objects and features in view and such other objects and features as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary side elevational view of the invention;

Figure 2 is a longitudinal cross sectional detail of one of the connections used in the invention;

Figure 3 is a cross sectional detail of another connection used therein, and

Figure 4 is a fragmentary side elevational view of a modified embodiment of the invention.

Like characters of reference are employed to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, more particularly to the Figures 1-3 inclusive, the general reference character 10 designates an internal combustion engine of a vehicle 12, the engine 10 having a cooling system including a radiator 14 to which it is connected by hot and cold water hoses 16, 18 respectively. The engine 10 also has an exhaust system for products of combustion, this including an exhaust manifold 20 communicating with an exhaust line 22. The instant invention concerning itself with the provision of a heater or a heating system for the body of the vehicle 12.

This heating system includes a conventional heater unit 26 which is installed in the body and a heat absorbing coil 28 which is mounted within the exhaust manifold 20 as shown in Figure 1, the coil 28 having a water inlet port 30 connected by a cold water tube 32 to the outlet port 34 of the heater unit 26, while the water outlet port 36 of the coil 28 is connected by a hot water tube 38 to the inlet port 40 of the heater unit.

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A word may be added at this point concerning the modified embodiment of the invention illustrated in Figure 4, this being similar to that shown in Figure 1 with the exception that the heat absorbing coil of the modified embodiment is installed in a suitable heat exchange chamber 24 installed at any point along the exhaust line 22.

In any event, it will be apparent from the foregoing that when the heating system is filled with water, the liquid in the coil 28 will become heated by the products of combustion in the manifold or heat exchange chamber, as the case may be, and a convection current will be set up, causing the heated liquid to travel through the tube 38 into the heater unit 26 and back through the tube 32 to the heat absorbing coil. Needless to say, the heater unit 26 may be installed under the instrument panel of the vehicle or under the front seat of the vehicle, as desired, and if necessary, a suitable pump may be provided in the tube 38 or the tube 32 as indicated by the phantom lines 42 in Figure 4, so as to assist the convection currents maintaining proper circulation of the heating medium.

The appropriate supply of water in the heating system is maintained by the provision of a water supply conduit or tube 44 which is connected at one end by a Y 46 to the cold water tube 32 and has its remaining end in communication, by virtue of an elbow 48, with the hot water hose 16. The elbow 48 is directed against the direction of flow of water through the hose 16 as is best shown in Figure 3, so as to eliminate any tendency of the liquid in the heating system to be "aspirated" into the cooling system of the engine.

Moreover, to eliminate the formation of any air locks or vapor locks in the heating system, a vapor escape conduit 50 is connected at one end thereof by means of a Y 52 to the hot water tube 38 while its remaining end is connected by an additional Y 54 to the aforementioned water supply conduit 44. In this manner, any vapors such as may be present in the heating system may escape through the conduit 50 and the conduit 44 into the top hose 16 of the engine cooling system, for subsequent dispersion into the atmosphere through the usual vent (not shown) of the radiator 14.

In addition to the foregoing, a by-pass conduit 56 is connected at one end thereof by a nipple 58 to the cold water hose 18, its remaining end being connected by a Y 60, to the hot water tube 38, the Y 60 containing a suitable valve manipulated by a handle 62 whereby water travelling from the coil 28 to the conduit 38 may be diverted from the heater unit 26 to the cold water hose 18 so as

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to render the heater unit inoperative during summer months.

It is to be also noted that the aforementioned Y 52 is provided in the arm 64 thereof to which the vapor escape conduit 50 is connected with a frusto-conical nozzle 66 affording a restricted orifice 68 (see Figure 2) so as to facilitate gradual escape of vapor when necessary, directly into the liquid in the tube 50 where vapors are automatically condensed, thereby eliminating loss of anti-freeze solutions by evaporation and at the same time discouraging the flow of the heating medium from the heating system into the hose connection 16 of the radiator 14.

It is believed that the advantages and use of the invention will be clearly apparent from the foregoing disclosure and accordingly, further description thereof at this point is deemed unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

In combination with a vehicle including a body, and an internal combustion engine having an exhaust system for products of combustion and a water cooling system including a radiator and hot

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and cold water hoses connecting said radiator to the engine, a body heating apparatus comprising a heater unit positioned in said body and having water inlet and outlet ports, a heat absorbing coil mounted within said exhaust system and having inlet and outlet ports, a hot water tube extending from the outlet port of said coil to the inlet port of said heater unit, a cold water tube extending from the outlet port of the heater unit to the inlet port of the coil, a water supply conduit connecting said cold water tube to the hot water hose of said radiator, a by-pass conduit connecting said hot water tube to the cold water hose of the radiator, a valve on said hot water tube for diverting water flowing therethrough into said by-pass conduit, and a vapor escape duct extending from said hot water tube to said water supply conduit and provided with a restricted outlet orifice.

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