Sept. 26, 1933. S. R. TERRELL 1,928,513

AUTOMOBILE HEATER

Filed May 12, 1930

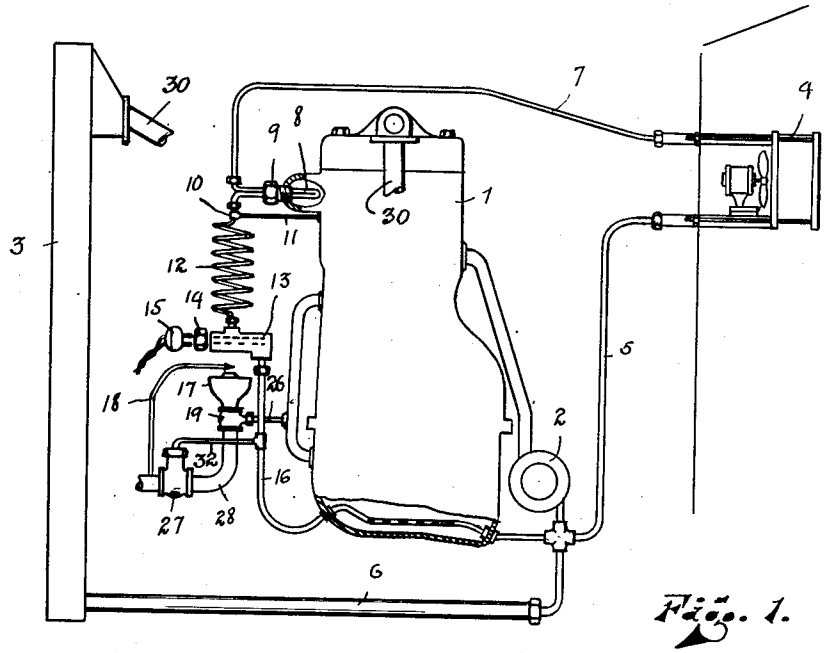


Fig. 1.

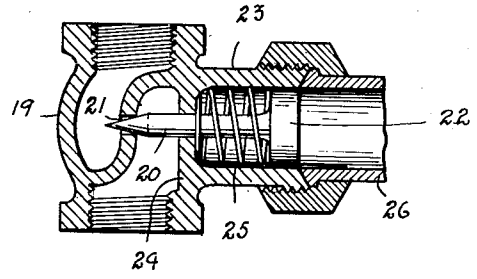


Fig. 2.

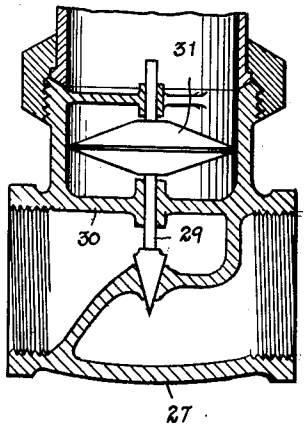


Fig. 3.

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AUTOMOBILE HEATER

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2 Claims. (Cl. 123—174)

This invention relates to new and useful improvements in apparatus for heating the interiors of automobile bodies, and relates particularly to that type of heater known as a hot-water heater wherein an auxiliary radiator is positioned within the car body having connection with the water-circulating system of the vehicle engine and whereby hot-water will be circulated through the radiator and incidentally warm the air in the car body.

The principal object of the invention is to provide such a heater with an auxiliary heating device to quickly raise the temperature of the water supplied to the air-heating radiator in the car body.

Another object of the invention is to provide a burner associated with said water circulating system to keep the water and oil of the vehicle engine warm during such times as the same may not be in operation.

A further object of the invention is to provide means whereby said burner is automatically operable by the pressure of the oil or the temperature of the water, or both.

Other objects and advantages of lesser importance will appear in the following description of the invention.

Referring now to the accompanying drawing wherein like reference characters indicate like parts:

Figure 1 is a diagrammatic view of the invention, showing the vehicle engine in end elevation and the water-cooling and air heating radiators in side elevation for convenience of illustration;

Figure 2 is a cross sectional view of the fuel line valve operable by the oil pressure of the vehicle engine;

Figure 3 is a cross sectional view of the fuel line valve operable by the temperature of the water-circulating system of the engine.

1 represents an ordinary internal combustion engine provided with the usual water jacket, and 2 indicates the usual water pump to insure circulation of the water, while 3 represents the water cooling radiator, and 4 the air heating radiator positioned within the car body and provided with the usual motor and fan for causing the air in the vehicle to be forced through the radiator and thereby become warmed. The bottom of the radiator 4 is connected by the pipe 5 to the water pump 2, and the bottom of the radiator 3 is also connected to the water pump by means of the pipe 6. The top of the radiator 4 is connected by means of the pipe 7 to one end of the exhaust heated coil 8, which is simply a piece of pipe bent upon itself and welded into the bushing 9 which is screwed into a hole in the exhaust manifold. The water to the radiator 4 is thus forced to circulate through the exhaust gases and thereby become additionally heated, consequently greatly increasing the efficiency of the air-heating radiator 4. The other end of the pipe 8 is connected to a T 10, from the branch opening of which extends the pipe 11 which is tapped into the water jacket of the engine. From the other opening in the T extends the coil element 12, the bottom of which is connected to a somewhat elongated narrow hollow casing 13 through which the water passes and within which is installed any form of electric water heating element indicated at 14, to which the outside electric circuit may be plugged as suggested at 15. A pipe 16 is connected to the casting 13 and this pipe extends through the oil pan of the engine out the other side and to the pump 2, thus completing the circulation of the water to the air-heating radiator 4. Under normal driving conditions the warm water passing from the water jacket through the pipe 11 on up into the pipe 8 which carries it through the intense heat of the exhaust manifold and from thence by the pipe 7 to the radiator 4 will provide ample heat to warm the air within the car body.

I have shown as being associated with this water circulating system just described, a kerosene or other fuel oil burner indicated at 17 and connected to any suitable fuel supply not shown. It is intended to have this burner operate automatically, it being ignited by the pilot light indicated at 18 which is connected to the supply pipe, so that the burner will ignite when the water cools to a certain temperature and be shut off immediately upou starting of the engine. To accomplish this I have installed in the fuel line to the burner 17 a needle valve 19, the needle of which is operable by the pressure of oil in the lubricating system of the engine. The needle plunger is indicated at 20, it closing upon the seat indicated at 21 and having the piston like head 22 operable within the cylindrical extension 23 of the valve casing. The plunger 20 extends through the bearing partition 24 in the valve which is in axial alignment with the valve seat, and between this partition and the head 22 there is installed the expansive spring 25, so that the tendency of the valve is to remain open and not restrict passage of fuel oil to the burner. However the pipe 26 is connected to the extension 23 at one end and to the lubricating system of the

engine at the other end, so that when the engine is started the pressure of the lubricating system will force the head inwardly closing the valve and thereby shutting off the burner 17. Likewise when the engine stops, the pressure in the oil system is released which allows the valve to open and permits the fuel oil to pass through the valve to the burner. However it is not necessary that the burner 17 ignite immediately upon the stopping of the vehicle engine, there being no necessity for such until the water in the motor cools to a certain temperature, and therefor I have also installed in the fuel oil supply pipe 26 the valve indicated at 27 which is likewise of the needle type; the needle plunger being indicated at 29, extending through the partition 30. Upon the outside of the partition 30 and on the plunger there is installed the temperature operable bellows 31, it being within the T extension of the valve casing, and which extension is connected by the pipe 32 to the water circulating system. Thus after the motor is shut down the valve 19 will be immediately opened, and then when the circulating water cools sufficiently for the bellows 31 to operate, the valve 27 will be opened and the fuel oil will be able to pass through both valves to the burner 17 which will then be ignited. This burner is installed just below the casing 13 and coil 12 so that the heat from the burner will keep the water in the circulating system warm and prevent freezing thereof during extreme winter temperatures and thus not damage the motor.

From the above it will be seen that I have illustrated and described a very efficient and practical heating system for automobiles.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. The combination with the water circulating system of an internal combustion engine, of a burner for heating the water in said system when the engine is not in operation, and a valve for controlling the supply of fuel to said burner, said valve being closed by the pressure of the lubricating oil of said engine, whereby said burner becomes inoperative.

2. The combination with the water circulating system of an internal combustion engine, of a burner for heating the water in said system when the engine is not in operation, and a valve for controlling the supply of fuel to said burner, said valve being normally biased toward open position permitting fuel to pass therethrough and closable by the pressure of the lubricating oil of said engine to render the burner inoperative.

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