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C. O. ERICKSON

CARBURETOR MANIFOLD HEATER

Filed May 18, 1925

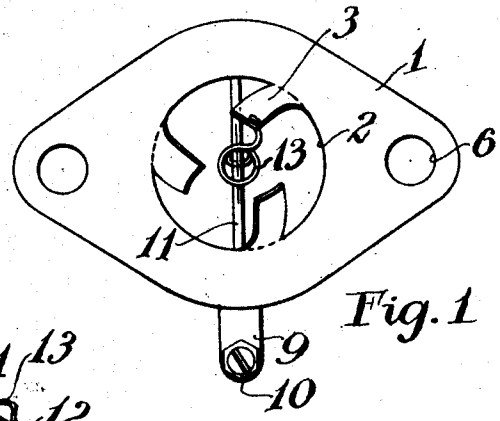


Fig. 1

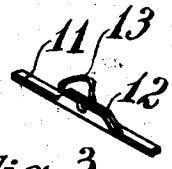


Fig. 3

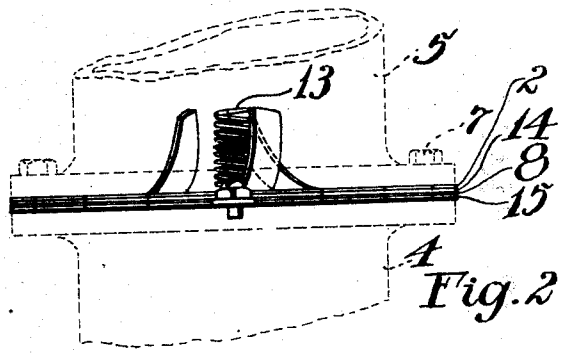


Fig. 2

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UNITED STATES PATENT OFFICE.

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CARBURETOR-MANIFOLD HEATER.

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The present invention relates to a gas vaporizing device for internal combustion motors.

In starting an automobile motor in cold weather, gasoline is mixed with air in the carburetor of the motor, and the charge so formed is drawn through the intake manifold to the cylinders. The intake manifold is cold, and gasoline may condense out from the vapor and form as a liquid on the side walls of the intake manifold, and the charge be chilled to a point which seriously impairs its explosive properties.

An object of the present invention is to heat and agitate gasoline vapor to prevent condensation of gasoline therefrom in traveling to a combustion chamber.

Another object of the invention is to volatilize gasoline vapor to maintain it in an explosive condition until it reaches a combustion chamber.

In order to attain these objects, there is provided, in accordance with one feature of the invention, a plate with a central opening therein, and spiral means mounted upon the plate to impart a swirling motion to gases passing therethrough. A heating element is located centrally of the opening to heat the gases passing therethrough.

These and other features of the invention, not specifically mentioned, will be more fully brought out in the following description and the accompanying drawings, wherein:

Figure 1, is a view in top elevation of a preferred embodiment of the invention.

Figure 2, is a view in side elevation thereof; and

Figure 3, is a view in perspective of a coil-supporting member mounted transversely of a central opening of the device.

Referring to the drawings in detail, a metal plate 1, which may be of brass, is cut to have a central opening 2 with fins 3 extending into said opening. These fins are bent to define a spiral helix. The plate 1 is shaped to coincide with a joint intermediate a carburetor 4 of a gasoline motor and an intake manifold 5 thereof, and is provided with holes 6 through which bolts 7 are passed in a well known manner to connect the carburetor to the intake manifold. A second metal plate 8 is cut to coincide with plate 1, and is provided with an extension 9 to which a nut 10 is secured to fasten an electrical conductor, not shown, to the sheet 8. A strip 11 extends across the central opening of the sheet 8, and at the center of strip 11 the metal thereof is turned up as at 12 to grip the lower end of a coil 13 of resistance wire. The upper end of the resistance wire coil is connected to the upper end of one of the spiral fins 3 to position the coil with its axis coincident with that of the intake manifold.

A pair of insulating strips 14 and 15 are positioned one above and one below sheet 8 to insulate it from sheet 8 and from the carburetor.

The operation of the device is as follows:

When it is desired to start a motor having one of the present devices installed therein, a source of electric current, such as a storage battery, not shown, is connected to the nut 10 and also to the intake manifold. This may be done in a well known manner by grounding one terminal of a battery or other source of current, to the frame of the automobile. The plate 1, being in contact with the intake manifold, receives the current through the intake manifold, and the current flows through the resistance coil to the terminal connected to the nut 10. This heats the resistance coil, the surrounding fins 3 being heated by radiation from the resistance coil. The current is preferably left on for an interval of about thirty seconds, to thoroughly warm the parts in the immediate vicinity of the coil. The motor is then rotated, either manually or with a starter, and a charge of gas is drawn through the carburetor. As the gas passes the resistance coil, it is heated thereby, and the fins 3 impart a swirling motion to it to thoroughly gasify any particles of gasoline which may be in the incoming charge, to make it more highly explosive.

The incoming charge is heated by the coil 13 to a point which will prevent the condensation of gasoline vapor on the walls of the intake manifold, during its passage therethrough, and in this manner insures that a combustible charge will reach the combustion chamber of the motor. As soon as the motor is started, the electrical current may be cut off from the heating coil, the fins 3 remaining in the path of the incoming gas to thoroughly agitate it and vaporize the gasoline contained therein.

What I claim is:

In combination with the intake manifold of an internal combustion motor, a plate of

electrically conductive material having a central opening of a size to conform with the opening of the intake manifold, helical fins carried by said plate and extending into the opening in said plate, a second plate of conductive material mounted adjacent the first plate and insulated from said plate and from the intake manifold, a strip of electrically conductive material connected to the second of said plates and mounted transversely of the central opening and having a bent-up portion centrally thereof, and a coiled heating element having one end thereof gripped by the bent-up portion of said transversely mounted strip and the other end thereof connected to one of the helical fins to electrically connect the first plate with the second plate to simultaneously swirlingly agitate and heat gases drawn through the intake pipe past said device.

In testimony whereof I affix my signature.

CARL O. ERICKSON.