

W. R. MATHIS:
VAPORIZER.

APPLICATION FILED APR. 30, 1917.

1,300,630.

Patented Apr. 15, 1919.

FIG. 1

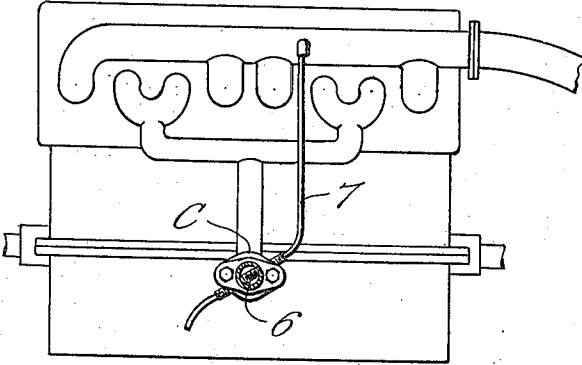


FIG. 3

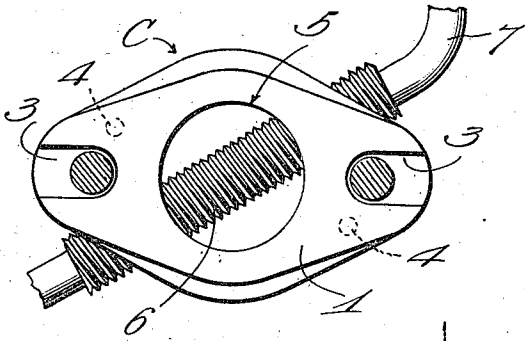


FIG. 2

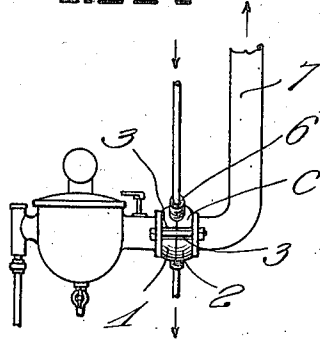


FIG. 4

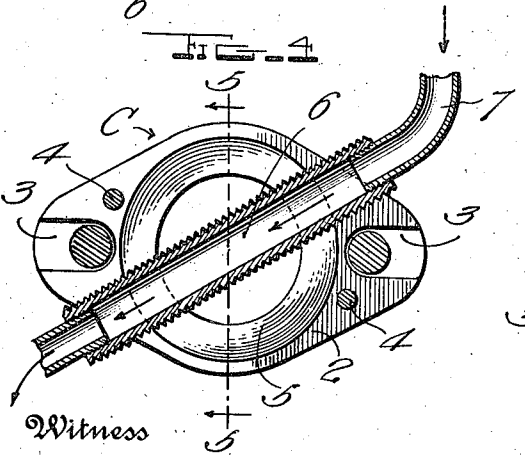
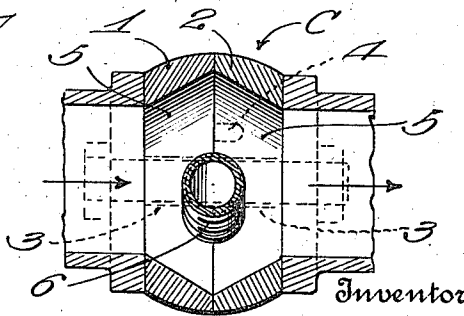


FIG. 5



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UNITED STATES PATENT OFFICE.

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VAPORIZER.

1,300,630.

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To all whom it may concern:

Be it known that I, WILLIAM R. MATHIS, a citizen of the United States, residing at Visalia, in the county of Tulare and State of California, have invented certain new and useful Improvements in Vaporizers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to vaporizers which are designed to be disposed in the intake manifolds of internal combustion engines to thoroughly heat the fuel gases passing therethrough and more particularly my invention relates to vaporizers adapted to be used in this capacity and with fuels of the heavier type such as the fuel oils that are not readily volatile except at high temperatures.

The principal object of my invention is to provide a vaporizer of this character which is adapted to be disposed in the intake manifold of an internal combustion engine in such a manner that it may be readily removed therefrom or that the component parts thereof may be disengaged for the purpose of cleaning the same without removing the vaporizer from the manifold.

Another object of my invention is to provide in a vaporizer of this character a novel means of construction, whereby the fuel will be caused to impinge upon a heating element disposed in the vaporizer so as to cause a more thorough mixing and heating of the fuel than is obtainable in the majority of vaporizers in use at the present time.

With these and other objects in view, which will appear from the description, my invention resides in the novel construction, combination and arrangement of parts to be more fully hereinafter described and claimed and taken in connection with the accompanying drawings which form a part of this application and in which:—

Figure 1 is a face view of an engine equipped with my improvement;

Fig. 2 is an elevation of the carburetor showing my vaporizer applied thereto;

Fig. 3 is a detail on an enlarged scale of the vaporizer;

Fig. 4 is a vertical sectional view through the center of the vaporizer;

Fig. 5 is a longitudinal sectional view on the line 5—5 of Fig. 4.

The principal defect in vaporizers of this type which are in use today is that they are not capable of thoroughly mixing the gases and heating the same in their passage through the vaporizer as they provide no means for providing a thorough commingling of the gases and forcing them around the heating element in such a manner that all portions of the gases passing through the vaporizer will be caused to come in contact with the heating element disposed therein. With these defects in view, I have constructed an improved type of vaporizer to overcome these objectionable features and which comprises substantially a casting to be disposed in the intake manifold of an engine having an enlarged chamber therein and having a heating tube passing through the chamber in such a manner as to cause the fuel to impinge upon the walls of the chamber and upon the heating tube and which tube is in communication with the exhaust manifold of an engine so that the gases may be passed therethrough for heating the same.

Referring more particularly to the accompanying drawings, I have illustrated my invention as comprising a casting C having a pair of substantially oblong separable castings 1 and 2 provided at their opposite ends with aligned vertically disposed recesses 3 extending therethrough to receive fastening bolts therein when the casting is applied in the intake manifold of an engine. One of the said castings, preferably designated as 1 in the drawings, is provided with a pair of upstanding pins 4 thereon arranged on opposite sides of the body of the casting and adapted to be received in a pair of similarly disposed recesses formed in the body of the other casting member 2 when the members are in applied position.

Each casting member is provided with a conical bore 5, the smaller and outer end of each of which is the same diameter as the bore of the manifold to which the vaporizer is applied and which when the members are joined form a chamber, the wall of which converges from its center toward the outer ends.

As a means of heating the fuel gases in their passage through the vaporizer, I provide a threaded copper heating tube 6 which

is extended through and diametrically across the chamber formed by the members 1 and 2. The heating tube 6 is extended transversely between the sides of the casting but at an angle thereto so as to extend diametrically across the chamber formed in the casting and in the plane of the largest diameter of the chamber and furthermore, the tube is threaded throughout its length to provide an increased radiating surface whereby to insure a more efficient action of the tube. At its outer ends the tube is adapted for connection to suitable conduits 7 extending from the manifold of the engine at one side and having communication with the atmosphere or return communication through the exhaust manifold at the other side as desired, so that the exhaust gases will be caused to pass through the tube thereby heating the same.

Owing to its construction, the tube 6 may be readily removed from the casting at any time without removing the casting from the intake manifold when it is desired to clean the tube. Owing to its construction the heating tube, located as it is in the plane of the largest diameter of the chamber, will cause the fuel gases in their passage through the vaporizer to impinge thereupon and be directed so as to impinge upon the concave walls of the chamber, whereby to cause the gases to assume a circuitous passage so that they will be thoroughly mixed and owing to the concave sides of the chamber the gases will be directed around the tube so as to be in contact with the heated surface of the tube at all points in their passage through the vaporizer. Furthermore, the chamber owing to its concave wall construction will provide an enlarged portion in the vaporizer

in which the gases will be allowed to slightly expand for a more thorough heating of the same against the serrated or threaded surface of the heating tube.

While I have described my improved vaporizer as being constructed of the two separate body portions 1 and 2, it is perfectly obvious and I so intend that it may be constructed of one entire casting having the tube removably threaded thereto and furthermore I desire it to be understood that although I have described certain specific details entering into the construction of my vaporizer, I do not wish to limit myself to these but that any changes may be made in the form of the vaporizer and in the details of its construction as will retain the principle of the invention and fall within the scope of the appended claim.

I claim:—

A vaporizer of the class described comprising a casting formed of opposed members each of which has a conical bore, which when the members are joined form a chamber, the walls of which converge from the center toward the outer ends of the casting, and a heating tube disposed transversely through the casting at the largest diameter of the chamber therein and threaded externally for engagement with and removal from the casting and to form an increased radiating surface.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM R. MATHIS.

Witnesses:

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J. W. ROBINSON, Jr.