Nov. 22, 1932. M. I. MAZAREK 1,888,682

VAPORIZER

Filed Oct. 29, 1930

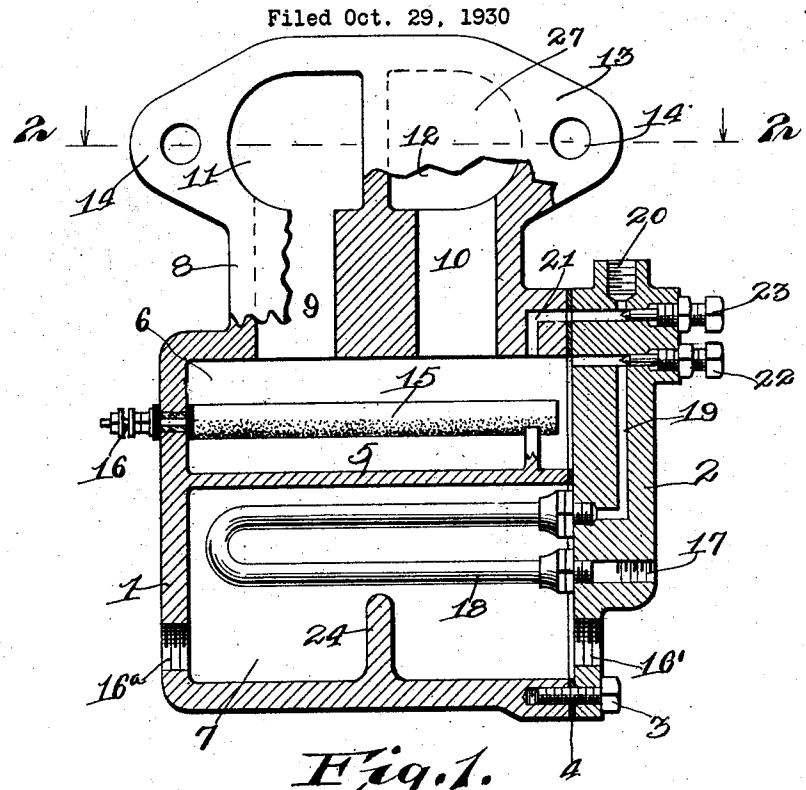

Fig. 1.

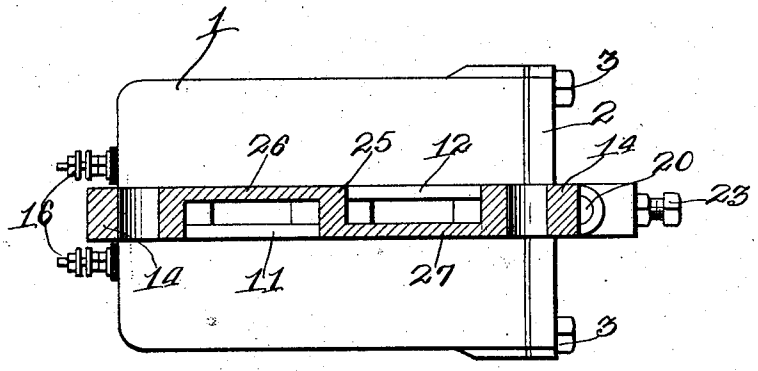

Fig. 2.

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VAPORIZER

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This invention relates to improvements in vaporizers.

One of the objects of the present invention is the provision of a device adapted to be arranged between the carburetor and a fuel inlet of an internal combustion motor, whereby to facilitate the starting of a cold engine by heating the fuel between the carburetor and the engine, so that the fuel will explode more readily when received in the engine, and the engine can be started more quickly than with the ordinary introduction of fuel therein.

Another object of the present invention is the provision of a vaporizing device wherein air, water vapor, and fuel vapor are mixed together and introduced into the manifold of the engine to provide for economizing of the fuel, and also to provide a comparatively smooth running motor due to the improved vaporized mixture, as it is a well understood fact that the mixing of water vapor with liquid fuels will create a smooth operation of a motor.

A further object of the present invention is the provision of a vaporizer which can be quickly and readily placed in position between the carburetor and the fuel inlet of a motor for causing the fuel from the carburetor to pass through a heated chamber, increasing vaporization of the fuel and also mixing with the fuel a moist vapor from the radiator of the motor, as well as the gasified fumes from the crank case of a motor for increasing efficiency of the fuel in the engine cylinders which will also provide for economizing in the use of the fuel.

With the above and other objects in view, the invention consists in the novel features of construction, the combination and arrangement of parts hereinafter more fully set forth, pointed out in the claims and shown in the accompanying drawing wherein:

Figure 1 is a vertical sectional view of my improved device with parts thereof illustrated in elevation;

Figure 2 is a sectional view on the line 2—2 of Figure 1.

Referring more particularly to the drawing, 1 indicates the main body or housing of my improved device having one end open, and this open end is normally closed by means of a head 2 attached to the body by means of screw bolts 3 with a suitable gasket 4 arranged between the head and the body. The body 1 is provided with a horizontal partition 5, dividing the housing into upper and lower chambers 6 and 7, respectively, with the lower chamber somewhat larger than the upper chamber, as shown in Figure 1.

Extending upwardly from the body is a neck portion 8 having passageways 9 and 10 therethrough, which lead into the upper chamber 6 and passageway 9 is provided with a lateral inlet 11 at its upper end, while passageway 10 is provided with a lateral outlet 12 arranged upon the opposite side of the head portion 13 from the inlet 11.

The head 13 is provided with laterally disposed perforated ears 14 for attachment to the conduit leading from the carburetor to the fuel inlet of a motor. Supported within the chamber 6 is an electric heating element 15 connected up by means of the binding posts 16 to a source of electrical supply. It will be apparent from the foregoing that the gaseous fuel from the carburetor will pass into the chamber 6 through the inlet 11 and passage 9, and after circulating around through the chamber 6 and becoming heated by the element 15 will rise through the passage 10 and out through the outlet 12, into the fuel conduit leading to the inlet of the motor. Attention is also directed to the fact that any fuel remaining between the carburetor and the motor will have a tendency to collect within the chamber 6 and as soon as the heater 15 is turned on, this fuel will become heated before taken into the cylinders of the motor, thus increasing the starting facilities of the motor.

At the lower side of the chamber 7, the head 2 is provided with an inlet 16′ which connects up with the exhaust from the motor, so that the heated exhaust will be carried through chamber 7 and out the outlet 16*a* at the opposite side of the chamber. This heated exhaust will heat the partition 5 and the heat from the partition 5 will radiate in the chamber 6, so that the gaseous fuel passing through this chamber will always be re-

tained in a heated condition before being received into the cylinders of an engine, thus increasing the active power of the fuel.

The head 2 has an inlet 17 to one side of the inlet 16′ and connected to this inlet 17 is one end of a U-shaped tube 18, the other end of the tube 18 being connected up with a passageway 19 leading into the chamber 6. The inlet 17 is connected up in any suitable manner to the crank case, so that the gasoline and oil laden vapors from the crank case can be directed upwardly through the tube 18 and thence up through the passageway 19 into the chamber 6 to be mixed with the fuel being directed to the motor cylinders.

By locating the tube 18 in the chamber 7 and directing the heated exhaust through this chamber, it will maintain the tube 18 in a heated condition so that the gasified air from the crank case will be introduced in the chamber 6 in a heated condition so as not to cool off the gaseous mixture in the chamber 6.

At one side of the head 2 there is an inlet nipple 20 which connects up with a passageway 21 leading into chamber 6. The nipple 20 is connected in any suitable manner to the upper portion of the radiator for the motor so as to direct the water vapor rising from the heated water in the radiator, to the chamber 6, to mix the same with the fuel being taken into the engine cylinders. The passageways 19 and 21 are provided with control valves 22 and 23, respectively, whereby the passage of gasified air through passage 19 can be readily controlled by the valve 22, and the passage of water vapor through the passage 21 can be controlled by the valve 23 whereby the amount of gasified air or water vapor entering chamber 6 can be regulated at the will of the user.

Arranged within chamber 7 and formed integral with the bottom of the housing 1 is a baffle 24 which directs the incoming heated exhaust upwardly toward the tube 18 and the partition 5 assuring the proper heating of these two members. In the operation of this device, the head 13 is placed in the fuel intake conduit of the motor and positioned between the carburetor and the intake manifold of a motor. The fuel from the carburetor will enter chamber 6 through the passage 9 and in the event of first starting the motor, the electric heating element 15 is used for thoroughly heating the gaseous fuel before the same passes into the engine cylinder. After the engine has become heated so that it runs smoothly, the heating element can be turned off as the heated air from the exhaust of the engine will supply sufficient heat to keep the chamber 6 in a heated condition. It will also be noted that the gasified air from the crank case and the water vapor from the radiator will enter chamber 6 shortly after the motor has been started and as soon as the same becomes heated, as the air in the crank case will be stirred up upon movement of the motor to cause this gasified air to rise upwardly and pass through tube 18, and through passage 19 into chamber 6 where it will be mixed with the gaseous fuel passing through this chamber.

It will be noted that the gasified air from the crank case is thoroughly heated before it enters chamber 6 to be mixed with the gaseous fuel, and the water vapor from the radiator is directed into chamber 6 from the radiator without any unnecessary circulation as this vapor is ordinarily in a heated condition and will readily mix with the heated gaseous fuel in the chamber 6.

It is believed from the foregoing that I have provided a very simple and inexpensive device which can be introduced into the fuel line of a motor whereby the fuel entering the motor cylinders will be maintained in a highly heated condition for extracting the extreme efficiency from the fuel on explosion of the same in the cylinders and by mixing the gasified air in the crank case with this fuel which increases the efficiency of the same. Furthermore, by introducing the water vapor from the radiator in the gaseous fuel, it will provide a very smooth running motor in addition to the maximum amount of power which can be obtained from the fuel by mixing with it the gasified air from the crank case and the water vapor from the radiator.

It will be noted in Figures 1 and 2 that the inlet 11 and outlet 12 are separated by means of a transverse partition 25, and the head has a closure wall 26 opposite the inlet 11 and a closure wall 27 is arranged opposite the outlet 12, so as to provide a positive separation of the outlet and inlet.

While I have shown and described the preferred embodiment of my invention, it will be apparent from the foregoing that slight changes may be made in the construction when putting the invention into practice without departing from the spirit of the same or the scope of the appended claims.

I claim:

1. A vaporizer including a body, a partition therein dividing the body into separate chambers, means for directing gaseous fuel through one of said chambers, means for directing heated air into the other of said chambers to maintain the first chamber in a heated condition, means arranged within the first chamber for initially heating the fuel, means for introducing crank case vapors into the first chamber, means for heating the crank case vapors in the second chamber before the crank case vapors are introduced into the first chamber, and means for introducing water vapor into the first chamber to be mixed with the gaseous fuel passing therethrough.

2. A vaporizer for internal combustion engines comprising a body, a partition in said body dividing the same into a heating com-

partment and a mixing compartment, means for leading a fuel mixture through the mixing compartment, means for leading products of combustion through the heating compartment for raising the temperature thereof to constantly heat the mixing compartment, and independent heating means arranged within the mixing compartment for initially heating the fuel mixture passing therethrough.

3. A vaporizer for internal combustion engines comprising a body, a partition in said body dividing the same into a heating compartment and a mixing compartment, means for leading a fuel mixture through the mixing compartment, means for leading products of combustion through the heating compartment for raising the temperature thereof for constantly heating the mixing compartment, a heating tube arranged within the heating compartment, means for leading crank case vapors through the heating tube and into the mixing compartment, and means for introducing water vapor into the mixing compartment.

4. A vaporizer for internal combustion engines comprising a body, a partition in said body dividing the same into a heating compartment and a mixing compartment, means for leading a fuel mixture through the mixing compartment, means for leading products of combustion through the heating compartment for raising the temperature thereof for constantly heating the mixing compartment, a heating tube arranged within the heating compartment, means for leading crank case vapors through the heating tube and into the mixing compartment, means for introducing water vapor into the mixing compartment, and means for controlling the flow of the heated crank case vapors and the water vapor into the mixing chamber.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

MARIJAN I. MAZAREK.