July 18, 1944. S. E. PETERS 2,353,926

GAS GENERATING APPARATUS

Filed July 17, 1941

Fig. 1

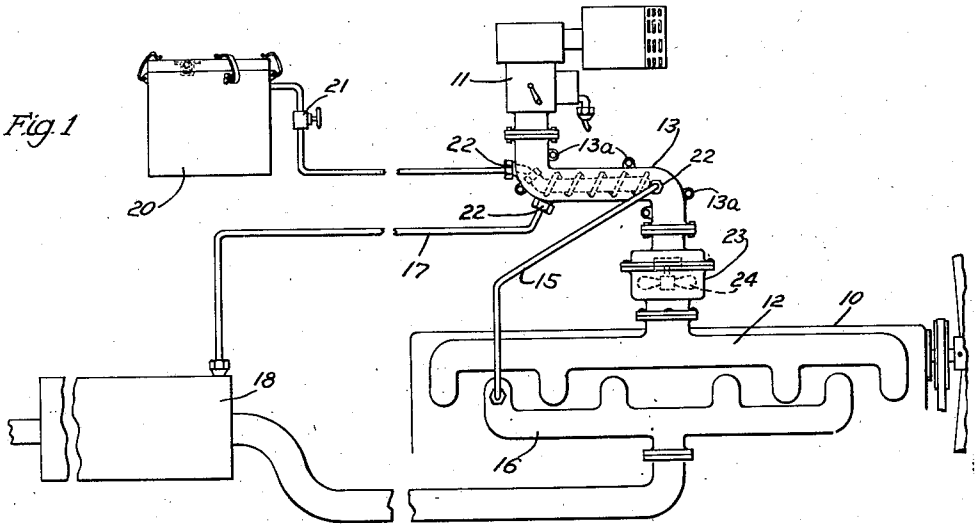


Fig. 2

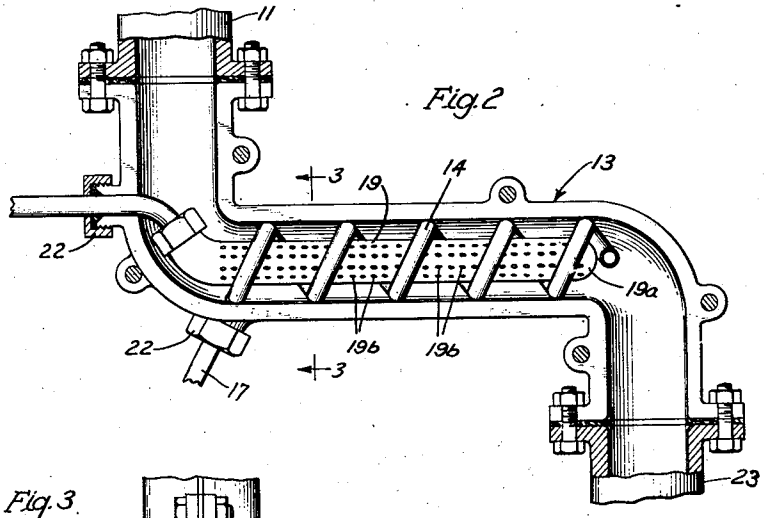
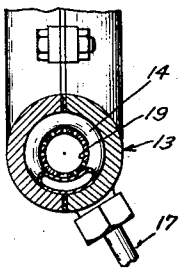


Fig. 3



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GAS GENERATING APPARATUS

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2 Claims. (Cl. 261—13)

This invention relates to means for generating dry, clean, invisible gas from an atomized fuel.

One object of the invention is to provide improved means which converts an atomized fuel into a dry, clean, invisible gas providing more perfect combustion than the unconverted fuel.

Another object of the invention is to provide means for generating a dry, clean, invisible gas and mixing therewith a supplementary fluid during the passage of the fuel stream to the place of combustion.

A further object of the invention is to provide for generating dry, clean, invisible gas from fuel passing from a carbureter to an intake manifold of an internal combustion engine, and means for supercharging the manifold with the generated gas.

Other objects of the invention relate to various features of construction and arrangement of parts which will be apparent from a consideration of the following specification and accompanying drawing, wherein

Figure 1 is a diagrammatic view illustrating an embodiment of the present improvements in association with pertinent portions of an internal combustion engine,

Fig. 2 is an enlarged broken elevation of apparatus embodying the present improvements, and

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

In the drawing, 10 indicates generally an internal combustion engine and 11 a carbureter for supplying an explosive mixture of air and gasoline or other fuel to an intake manifold 12. For the purpose of generating a dry, clean, invisible gas from the fuel stream passing from the carbureter to the manifold, I have shown interposed between the latter two elements a tubular casing 13 within which is positioned a helical member 14. The member 14 is tubular, as illustrated, and may be formed of copper or other suitable heat conducting material. As shown in Fig. 1, one end of the helical member 14 is connected by a tube 15 with the exhaust manifold 16 of the engine while the other end of the member 14 may be connected by a tube 17 with the muffler 18. By means of the arrangement mentioned, hot exhaust gases are conducted through the helix 14 for heating the atomized fuel stream which passes through the casing 13. The helix 14 has a major diameter corresponding to the internal diameter of the casing and thus closely fits against the inner wall of the casing.

Within the central passage of the helix, and closely fitting the same, is a tubular member 19 which is closed at its forward end 19a and at its rear end extends from the casing 13 and, in the embodiment illustrated, communicates with a receptacle 20. This receptacle may contain any suitable fluid, the vapor of which it is desired to add to the combustible mixture passing through the member 13. For example, the receptacle 20 may be supplied with water whereby when the latter is heated by heat derived from the engine in any suitable manner or otherwise, water vapor may be added to the carbureted fuel stream. Ether or other fluids may be employed for assistance in starting the engine or for giving it additional power from time to time as desired.

A valve 21 is shown for controlling the flow of the supplementary vapor fuel or air to the member 19. It will be noted that member 19 is provided with perforations 19b which constitute exits for the supplementary vapor or vapors. The diameter of the portion of the member 19 within the casing 13 as stated corresponds to the internal diameter of the convolutions of the helix, and hence there is provided in the casing a helical path or passage through which the fuel stream must flow in passing through the member 13 from the carbureter to the intake manifold. Since the fuel stream in flowing to the manifold must follow the helical path above mentioned, that is, a path which lies between the convolutions of the member 14 and helically entwines the member 19, a centrifuging action is produced which tends to force the larger liquid fuel particles into contact with the inner wall of the member 13, as well as into contact with the convolutions of the heating coil 14 for effecting the vaporization of such liquid particles.

The heat provided by the member 14 not only completely vaporizes liquid fuel particles but generates from the atomized fuel a dry clean invisible gas that is more completely combustible when it reaches the cylinders of the engine. The generated gas is delivered to the intake manifold in a relatively dry and heated condition, and hence, upon entrance into the cylinders, does not condense readily on the cylinder walls and thus dilute the crank case oil. A more complete combustion of the fuel is obtained with the result that greater power is delivered by the fuel where the present improvements are employed and relative economies in fuel consumption are effected.

In Figure 1 of the drawing I have shown a casing 23 interposed between the casing 13 and the intake manifold 12. In the casing 23 is mounted an electric fan 24 or other impeller which when in operation augments the flow of the fuel stream

to the manifold 12. The action of the fan is to supercharge the manifold with the gas fuel thereby rendering the engine more smoothly operable especially at high speeds. The use of the supercharger in conjunction with the gas generator is optional however.

As shown in the drawing, the casing 13 may be formed in two sections for convenience in locating the heating coil 14 and the member 19 within the casing. The casing sections are adapted to be secured together by bolts or screws passing through ears 13a. The ends of the heating coil 14 are shown as passing from the casing 13 through suitable packing glands 22 as is the member 19 also.

While I have shown my preferred means for generating a dry, invisible gas fuel from a a carbureted fuel stream, it will be apparent that various changes may be made in the disclosed structure without departing from the spirit of the invention as defined by the appended claims.

I claim:

1. Apparatus of the class described comprising a cylindrical fuel conducting casing, a helical tube for a heating medium located in the casing and contacting the interior wall thereof, a tubular central member located within and filling the center of the tube helix and cooperating with the latter and the casing to define a fuel confining helical passage within the casing of a length corresponding to the helix of the tube, said central member having perforations communicating with said helical passage and means for supplying said tubular central member with a supplementary fluid for discharge through the perforations of the latter into the helical stream passing through the casing.

2. Apparatus of the class described comprising a tubular casing for conveying atomized fuel, means in said casing defining a helical fuel passage for causing the fuel to flow in a helical course through said casing, and a tubular conduit extending into the axis of the casing and provided with one or more outlets in registration with the helical passage for discharging an auxiliary fluid into said helical stream for admixture therewith.

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