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J. E. PORTER

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FUEL FEED MECHANISM

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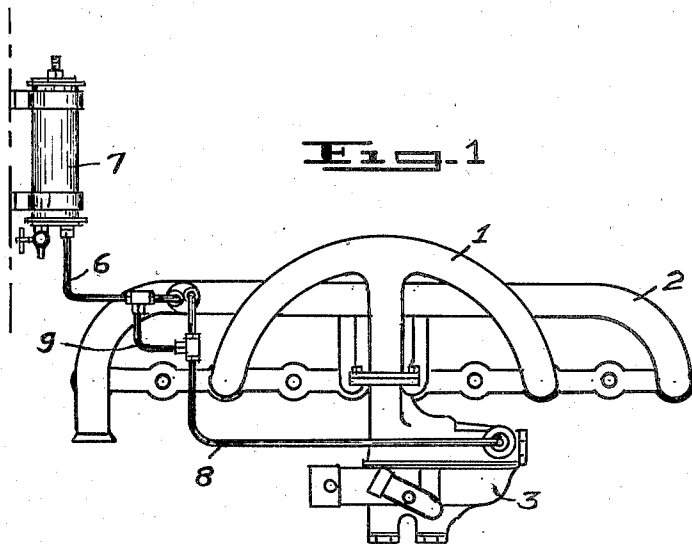


Fig. 2

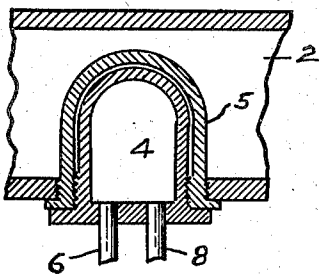


Fig. 3

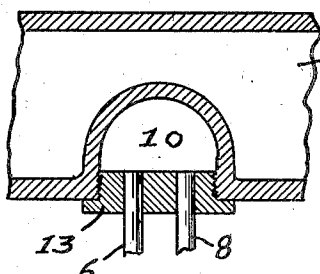


Fig. 4

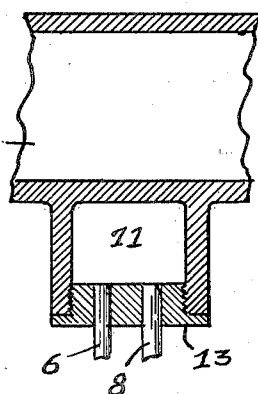
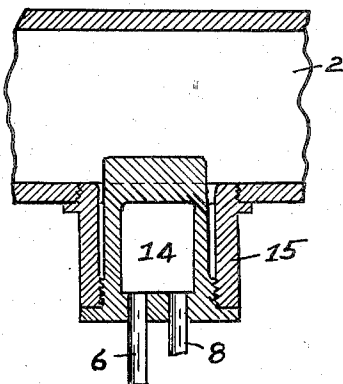


Fig. 5



INVENTOR
John E. Porter
By Jack Snyder
Attorney

UNITED STATES PATENT OFFICE

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FUEL FEED MECHANISM

John E. Porter, Sewickley, Pa., assignor to Emily
W. Porter, Sewickley, Pa.

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1 Claim. (Cl. 257-241)

My invention relates to a fuel feed mechanism, and while primarily intended for combustion engines employing gasoline fuel, it will be obvious that the device may be used in connection with other types of fuel or apparatus wherein it is found to be applicable.

Important objects of the invention are to provide a simple and durable fuel feed mechanism, which will effect a substantial saving in fuel while enhancing the power, efficiency and smoothness of the engine operations, which promotes more perfect fuel combustion preventing carbon deposits and minimizing carbon monoxide exhaustion, which embodies but few parts, and which may be readily installed to engines already constructed as well as form a component part of a new engine structure.

To the accomplishment of these and such other objects as may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts herein specifically described and illustrated in the accompanying drawing, but it is to be understood that changes in the form, proportions and details of construction may be resorted to that come within the scope of the claim hereunto appended.

In the drawing, Figure 1 is a side elevational view of an internal combustion engine manifold provided with a fuel feed mechanism constructed and arranged in accordance with the invention. Figure 2 is an enlarged top plan view of the fuel heating element embodied in the present invention and mounted within the exhaust manifold, the latter being fragmentary and in cross section. Figures 3, 4 and 5 are similar views of modified forms of the device.

Referring in detail to the drawing, 1 and 2 respectively denote the intake and exhaust manifolds, which may be of any type or construction now in common use on internal combustion engines. The intake manifold 1 is joined with the carburetor 3 in the manner and for the purpose well known in the art to which the invention appertains.

A closed fuel receptacle 4 is preferably removably secured in a protective casing 5, which projects into the exhaust manifold 2 and is fixedly supported in an opening in the outer wall of the latter in any suitable manner. The protective casing is provided to shield the fuel receptacle from direct contact with the exhaust products of combustion on their passage through the exhaust manifold during the operation of the engine.

One end of a fuel inlet pipe 6 is connected in the outer end wall of the fuel receptacle 4, and

the other end thereof, connects with the vacuum fuel tank 7, as shown, or to any other source of stored fuel supply. One end of a fuel outlet pipe 8 also connects with the outer end wall of the fuel receptacle, and the other end thereof joins with the carburetor 3. It will here be noted that, the connection of the inlet and outlet pipes, in the manner stated, provides a continuous passage through all of said members and extending from the fuel supply tank to the carburetor.

A connecting tube 9 joins with and establishes communication between the fuel inlet and outlet pipes 6 and 8 to provide a by-pass for the passage of fuel so that a portion of the latter will pass from the inlet pipe into the outlet pipe without passing through the fuel receptacle 4. The relative capacities of the connecting tube and inlet and outlet pipes is pre-determined and controlled to provide a fuel admixture to most efficiently meet conditions found in practice.

The fuel receptacle 4, being mounted in the exhaust manifold 2, is subjected to the heat from the exhaust products of combustion and heated to a temperature that will vaporize the gasoline on its passage therethrough. The vaporized gasoline from the fuel receptacle will mix with the raw gasoline passing through the connecting tube 9 and combinedly form a heated and partially vaporized mixture. The latter admixed with the proper quantity of air during the normal process or carburetion, provides a most effective fuel admixture that may be readily and completely atomized. Such complete vaporization of the fuel admixture entirely eliminates fuel waste and promotes perfect combustion and highly efficient engine performance.

In the modified form of the invention, disclosed in Figures 3 and 4, the fuel heating receptacles, respectively indicated at 10 and 11, are cast to form an integral part of the outer wall of the exhaust manifold 2. The receptacle 10 projects inwardly into the exhaust manifold, and the receptacle 11 extends outwardly from the latter. The receptacles 10 and 11 are provided with detachable closure plugs 13 joining with the fuel inlet and outlet pipes 6 and 8.

In Figure 5 of the drawing, the embodiment of the invention provides a separate fuel receptacle 14 in an open, outwardly extending supporting neck 15. The latter is secured in an opening provided therefor in the outer wall of the exhaust manifold 2. The fuel receptacle 14 projects into the exhaust manifold and is heated by the exhaust products of combustion. The outer

end wall of the receptacle 14 is joined with the inlet and outlet pipes 6 and 8.

In the use of my improved device, the fuel is uniformly heated in the heating receptacle by the exhaust products of combustion on their passage through the exhaust manifold, regardless of the engine speed, as the frequency, intensity and amount of exhaust products varies in ratio to the relative speed of the engine and the varying amounts of fuel consumed at such varying engine speeds.

Systems of fuel feeding by direct injection of combustible fuel into the explosion chambers of the engine have been advocated and experimented with for many years, and while as yet none of these systems has successfully competed with the usual carburetor system, the present invention is readily adaptable to direct fuel injection to supplant the present systems of carburetion.

What I claim is:

A fuel heater for internal combustion engines comprising a supporting neck having an externally threaded inner end adapted to be connected in an opening in the exhaust manifold of the engine, said supporting neck further provided with an internally threaded outer end, a fuel receptacle having a screw thread connection with the threaded outer end of said supporting neck, said fuel receptacle projecting inwardly beyond the inner end of said supporting neck, a fuel inlet pipe communicably joined in the outer wall of said receptacle, a fuel outlet pipe communicably joined in the outer wall of said receptacle, and a connecting tube communicably joined with said fuel inlet and outlet pipes.

JOHN E. PORTER.