

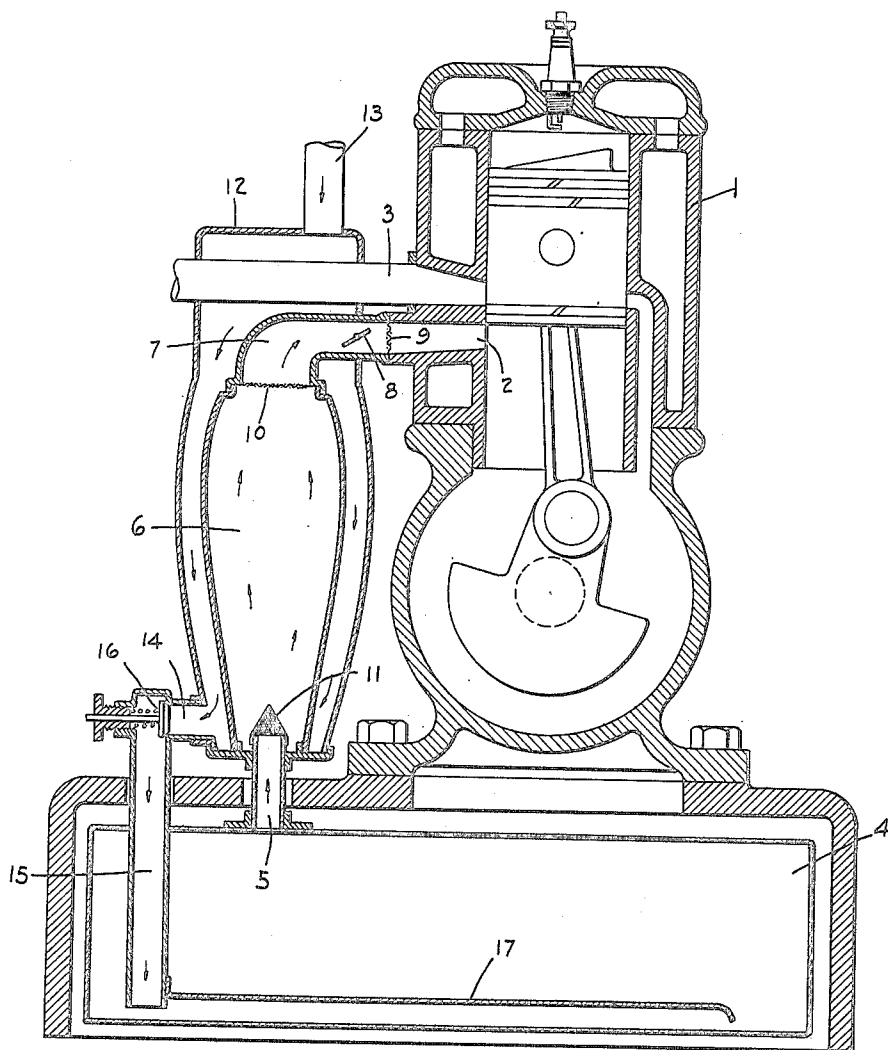
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I. T. SWARTZ.

FUEL SUPPLYING MEANS

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UNITED STATES PATENT OFFICE.

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FUEL-SUPPLYING MEANS.

Application filed March 15, 1920. Serial No. 365,879.

To all whom it may concern:

Be it known that I, IRA T. SWARTZ, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Fuel-Supplying Means, of which the following is a specification.

This invention relates to fuel supplying means adapted for various uses, but more particularly for feeding fuel to internal combustion engines or to burners of various types, such as are ordinarily used for heating purposes, it being among the objects of this invention to produce a device which is simple, reliable, economical, and which requires little or no adjustment in use.

In carrying the objects of my invention into effect, I provide a source of fuel which is preferably liquid, although I may use a compressed gas or similar fuel. A receptacle, preferably dome or balloon shaped, is placed in communication with the source of fuel and leads to the engine or other device to be utilized. Usually to aid in forming a combustible or explosive mixture I provide means whereby air is led into the fuel supply passing through or over the fuel to form the gaseous mixture which collects in the receptacle.

When this invention is used in conjunction with internal combustion engines I usually make the pipe or manifold or other means used for leading the combustible mixture to the engine of a definite size so proportioned that only sufficient mixture can be drawn therethrough to supply the engine running at full load, or a definite percentage of overload. This restriction on the fuel supply may be placed at any point, such as the air intake, but is preferably at the fuel intake tube. In addition there is generally provided means for insulating the receptacle and for pre-heating the air.

Referring to the accompanying drawings forming a part hereof, and in which similar reference characters denote similar parts,

The single figure illustrates a vertical cross section through the device forming my invention and the cylinder of a two-cycle engine shown in conjunction therewith.

The engine 1 has the ordinary intake manifold or tube 2 and exhaust manifold or tube 3. In the base of the engine is placed

a fuel supply usually in the form of a tank 4 having an outlet 5 at its upper end leading to a receptacle 6 preferably dome or balloon shaped, the upper end 7 of which leads to the intake manifold 2. The pipe 7 is generally restricted to such a point that the suction of the engine is capable of drawing in only sufficient gaseous mixture to operate the engine at full load, and thus prevents overloading of the engine and consequent injury to the mechanism thereof.

A throttle valve 8 is provided in pipe 7 and is generally controlled by a throttle governor so that it is tightly closed when the engine is not operating, thereby preventing the escape of gaseous mixture from receptacle 6. Check means, such as gauges 9, 10, and 11, are provided at various points in order to check the possible back fire from the engine and prevent premature explosion of the combustible mixture in the receptacle 6 or pipe 7. The gauze is generally formed of woven wire cloth. A jacket 12 surrounds the receptacle 6 and is provided with an air intake opening 13 and an air outlet opening 14. The exhaust manifold 3 passes through the upper portion of jacket 12 and provides means for heating the air passing through the jacket. The outlet 14 communicates with air pipe 15 extending into the tank 4, a valve 16 being provided to regulate the supply of air and to prevent escape of volatile fuel into the atmosphere. A perforated distributor 17 distributes the air uniformly over the entire surface of the tank.

In operating an engine with my device I provide lubrication for the connecting rod by mixing the fuel in tank 4 with a small amount of lubricating oil. The operation of the engine will then be as follows:

Upon turning over the piston a suction will be created which draws in air through intake pipe 13 causing it to pass around receptacle 6 into pipe 15 through perforated distributor 17 causing it to bubble through the liquid fuel; the gaseous mixture thus formed passes into pipe 5, together with some liquid fuel carried along as spray and some of the oil which has been mixed with the fuel. Gauze 11 breaks up the liquid particles causing some of them to be vaporized and others to drop back into the fuel supply, so that the mixture collecting in receptacle 6 is substantially a gaseous mixture which

is drawn into the engine and burnt as usual. Sufficient oil is carried along with the gaseous mixture that enters the crank case to lubricate the connecting rod.

5 Although I have shown and described a specific embodiment of my invention, it is to be understood that my invention is not limited to the details shown, but various changes may be made within the scope of my
10 invention. For instance, the combustible mixture is not necessarily led to an engine, but may be utilized for other purposes, and the air for the combustion need not be bubbled through the liquid fuel, but in certain
15 cases may be passed over the fuel, especially where the fuel is rich in volatile matters or consists of a compressed gas. I also contemplate making various changes, such as the use of an auxiliary supply of air which
20 does not pass through the fuel supply and which is intended to be used when the engine runs at high speeds.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:

25 1. A fuel supplying means, comprising a tank, a restricted outlet for said tank, a receptacle into which the upper end of said outlet extends, said receptacle having a re-
30 stricted opening at its upper end for controlling the escape of the gaseous mixture from said receptacle, a jacket entirely surrounding said receptacle and spaced therefrom, means for directing air into the space
35 between said receptacle and jacket, means for heating the air as it passes through the jacket, means for conveying the heated air into said tank and through the contents

thereof, and a valve for controlling the passage of the air from the jacket to the tank. 40

2. The combination with an engine having an intake and an exhaust, of a fuel tank, a receptacle above said tank, a restricted discharge member at the upper end of said receptacle communicating with said intake for
45 controlling the admission of fuel to the engine, a restricted connection between the tank and receptacle, a jacket entirely surrounding said receptacle, through the upper end of which said exhaust extends for heat-
50 ing the contents of said jacket, and means for discharging the heated air into said tank below the surface of the contents thereof.

3. The combination with an engine having an intake and an exhaust, of a fuel tank, 55 a receptacle above said tank, a restricted discharge member at the upper end of said receptacle communicating with said intake for controlling the admission of fuel to the engine, a restricted connection between the
60 tank and receptacle, a jacket entirely surrounding said receptacle, through the upper end of which said exhaust extends for heating the contents of said jacket, means for discharging the heated air into said tank be-
65 low the surface of the contents thereof, and a plurality of baffles between said engine and tank.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, 70 this 6th day of March, A. D. nineteen hundred and twenty.

IRA T. SWARTZ. [L. s.]

Witnesses:

H. C. BIERMAN,
M. L. SHULER.