PATENT SPECIFICATION

Application Date: Dec. 19, 1927. No. 34,312/27. 296,238

Complete Accepted: Aug. 30, 1928.

COMPLETE SPECIFICATION.

Improvements in or relating to Means for Forming Combustible Mixtures for use in Internal Combustion Engines.

We, CHARLES NELSON POGUE, and ALFRED JOSEPH ANDREWS, both subjects of the King of Great Britain, and residents of Hulton Post Office, St. Vital, and 749, Wellington Crescent, City of Winnipeg, Province of Manitoba, Dominion of Canada, Mechanical Engineer and Barrister respectively, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in means for forming combustible mixture for use in an internal combustion engine, and the object of the invention is to effect an economy in the use of combustible fuel such as gasoline.

A further object of the invention is to utilize the gasoline tank as a source of supply for combustible mixture which in accordance with our invention is introduced into an internal combustion engine through the medium of an ordinary carburettor of any suitable known type.

We are aware that it has hitherto been proposed to provide a surface carburettor for use in connection with an internal combustion engine comprising a main fuel tank, an air chamber adapted to be heated by the exhaust system of the engine, apertures providing communication between the air chamber and the upper part of the fuel tank, a rotary agitator within the tank driven by a vaned member contained in a casing situated within the air chamber and rotated by the exhaust gases of the engine, and a conduit leading the mixture from the upper part of the tank to the engine, and we make no broad claim herein to such a construction.

This invention in the main consists essentially of the following combination, a main fuel tank, an air heating chamber associated with the exhaust system of the engine, a conduit leading from the air heating chamber to the upper part of the fuel tank, an agitating device within said tank, an air compressor adapted to force a separate supply of air into the tank and through the fuel therein to further agitate the said fuel and a conduit conveying the mixture of vaporised fuel and air from the upper part of a tank to the intake of an ordinary type of carburettor adapted to supply the combustible mixture to the engine.

In the accompanying drawings in which like characters of reference indicate corresponding parts.

Figure 1 is a side elevation partly in section showing the embodiment of our invention.

Figure 2 is a plan view of our improved device as associated with a motor car.

Figure 3 is an enlarged transverse section of the fuel or gasoline tank illustrating the agitating means therein.

Figure 4 is a detailed section illustrating the mechanism by which the agitator is operated within the fuel tank.

Figure 5 is a sectional detail of the air line connected with the ordinary carburettor and illustrating the backfiring valve therein.

Referring now particularly to the drawings in which our improved device is illustrated, A indicates an automobile of any well known type, B the engine thereof, C the ordinary carburettor and D the fuel or gasoline tank. The tank may be of any convenient form and, in accordance with the present invention, at or near one extremity of its upper part is connected by a flexible conduit 10 with the air intake 11 of the carburettor C. The opposite extremity of the upper part of the tank, as will be seen by referring to Figure 2, has connected thereto a flexible conduit 12 leading from a hot air chamber 13, which surrounds the exhaust manifold 14 of the engine B.

In this particular type of invention, it is essential that means be provided whereby the fuel within the tank is agitated in such a manner as to create vapors or fumes which, as will be hereinafter more fully explained, is directed to the carburettor for consumption in the engine. The means as shown in the present invention is an agitator comprising a float 15 provided with wings 16 vertically slidable upon but adapted to

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be rotated by a square or hexagonal shaft 17.

On reference to Figure 3, it will be seen that the shaft 17 extends upwardly into a housing 18 and is provided at the top with a bevel gear 19 meshing with a bevel gear 20, which in turn is mounted on a shaft 21. The shaft 21 in turn is connected through a length of flexible shafting 22 to the shaft 23 which is mounted in the exhaust manifold 14 and is provided with a series of propeller blades 24.

The operation of the agitating member 15 will at once become apparent. The spent gas travelling through the exhaust manifold will rotate the blades 24 upon the shaft 23 in turn operating the shaft 17 to cause the agitator with wings 16 thereon to agitate the fuel within the tank D. Particular provision is made in this case in that the member 15 is formed of cork or other light material, whereby this member always remains at the level of the fuel within the tank.

In addition to the foregoing, a further means of agitating the fuel in the tank comprise the introduction of air thereinto, preferably from the base thereof. The means which we have shown comprise an air line 25 connected to any convenient type of air compressor 26 which is driven through the operation of the engine B and connected to the base of the tank D as indicated at 27. A valve 28 within the tank is provided with a ball check 29 by which means air is permitted to enter therein while preventing the fuel from entering the air line 25.

Within the tank D, we provide baffle plates 30 designed to prevent excessive splashing of fuel within the tank.

The air intake 11, previously referred to and as particularly illustrated in Figure 5, is provided with a back-firing valve 31 and a flap valve 32. The valve 31 is designed to permit the mixture to pass from the tank to the ordinary carburettor C, but in the event of back-firing through the carburettor C, the valve will prevent the flame from entering the gasoline tank. As the valve 31 closes to prevent the flame from entering the gasoline tank, the flap valve 32 automatically opens and allows the said flame to escape to the atmosphere.

In operation the action of the engine will cause air to be forced into the fuel tank by the operation of the pump 26 which will agitate and tend to vaporize the fuel. Simultaneously with this operation the exhaust gases will operate the blades on the shaft 23, which in turn will affect the operation of the agitator member 15 which through its rotary movement will create a vapour within the fuel tank. The suction of the engine operating through the carburettor C, and the intake thereof will simultaneously with the aforementioned operation create a suction in the conduit 10 which will draw off the fuel vapours or fumes from the upper part of the tank D, which have been created therein. During this operation, heated air passes from the hot air chamber associated with the exhaust manifold by means of the conduit 12 to the tank D which will further assist in the vaporization of the fuel within the tank.

From the foregoing it will be apparent that novel and effective means are provided for the creating of combustible mixture within the fuel tank for consumption by the engine and in this manner a very considerable saving is effected in fuel and the cost of operation.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Means for producing a combustible mixture for use in an internal combustion engine comprising in combination a main fuel tank, an air heating chamber associated with the exhaust system of the engine, a conduit leading from the air heating chamber to the upper part of the fuel tank, an agitating device within said tank, an air compressor adapted to force a separate supply of air into the tank and through the fuel therein to further agitate the said fuel and a conduit conveying the mixture of vaporised fuel and air from the upper part of a tank to the intake of an ordinary type of carburettor adapted to supply the combustible mixture to the engine.

2. Means for producing combustible mixtures for use in internal combustion engines as claimed in Claim 1, and wherein the air compressor forces air into the fuel tank through a conduit having valve means provided in connection therewith adapted to permit the entrance of air into the tank while retaining the fuel therein.

3. Means as claimed in either of the foregoing claims and wherein a rotary agitator provided within the fuel tank is driven through gearing from a vaned member rotated by the exhaust gases of the engine and provided within the exhaust manifold.

4. Means as claimed in Claim 3, and further characterised in that the rotary agitator within the fuel tank is driven through a flexible shaft and bevelled

gearing enclosed within a housing provided on the fuel tank.

5. Means for producing combustible mixtures for use in internal combustion engines as claimed in any of the foregoing claims and wherein the hot air is led to the fuel tank from an air heating chamber surrounding the exhaust manifold of the engine.

6. Means as claimed in any of the preceding claims and wherein the ordinary type of carburettor through which the combustible mixture is adapted to be supplied to the engine, has its intake provided with a spring actuated back-fire valve for preventing flame from the back-fire gaining access to the fuel tank and a flap valve for enabling the arrested flame to escape to the atmosphere.

7. Means for producing combustible mixtures for use in internal combustion engines constructed, arranged and functioning substantially as herein described with reference to the accompanying drawings.

Dated the 16th day of December, 1927.

ERIC POTTER,
Patent Agent,
London and Nottingham.

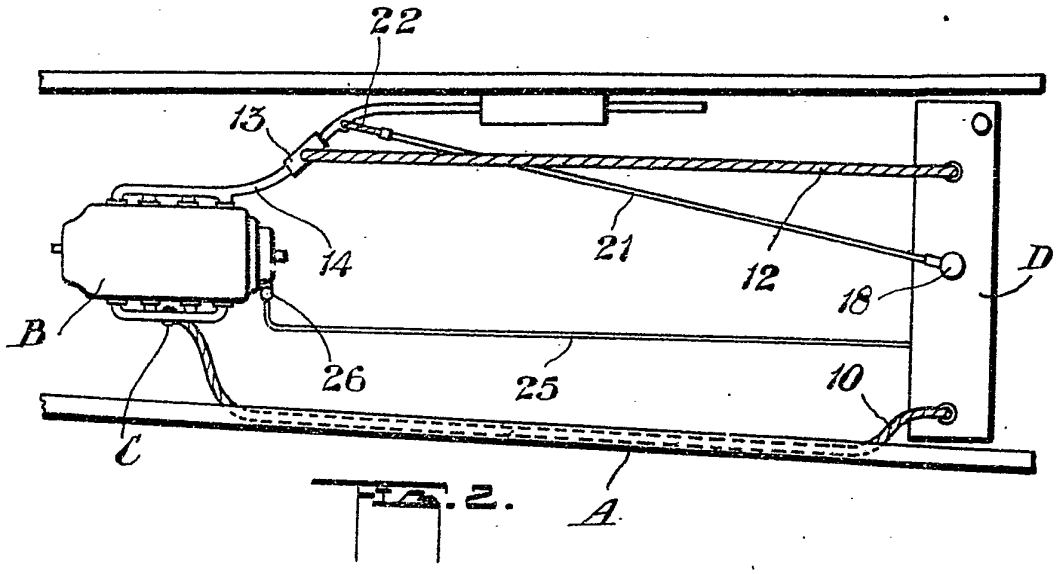


FIG. 2.

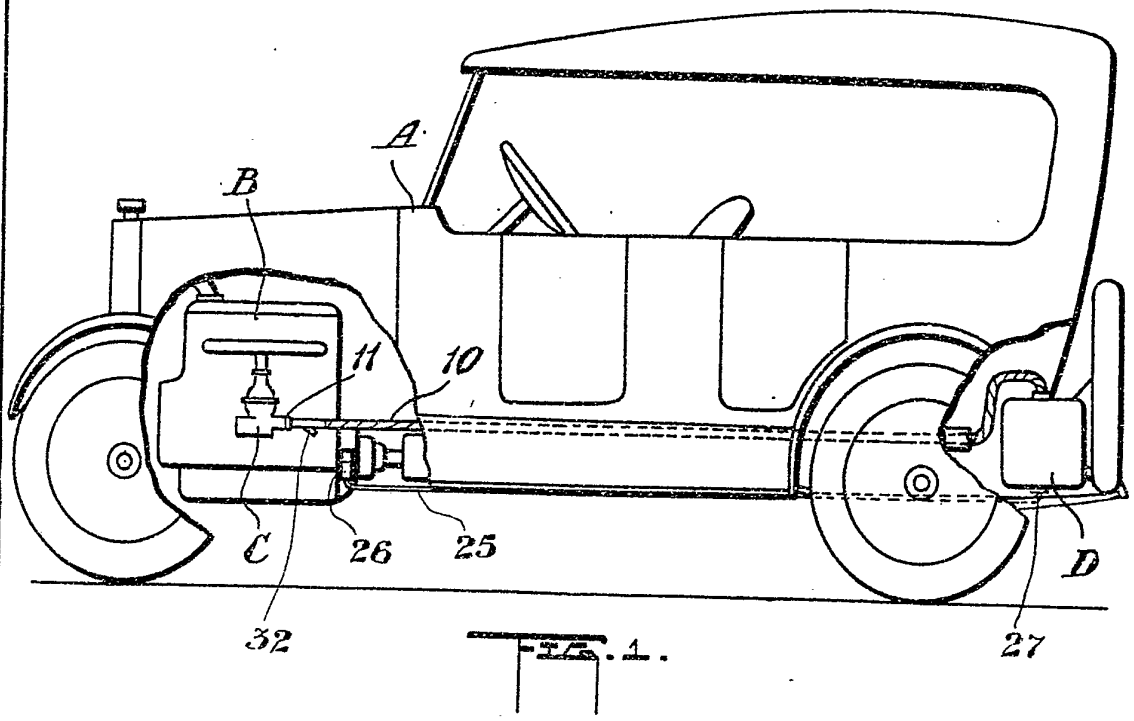
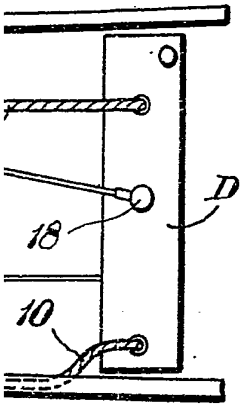
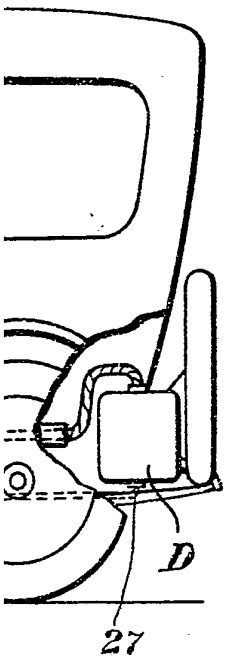


FIG. 1.

2 SHEETS

SHEET 1





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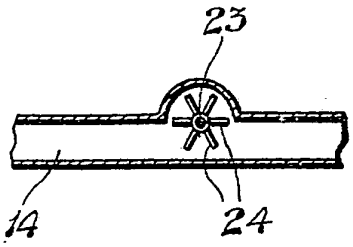

FIG. 4.

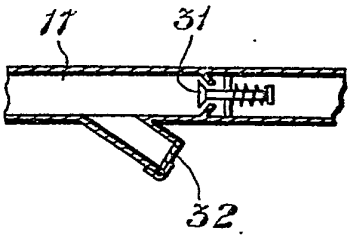

FIG. 5.

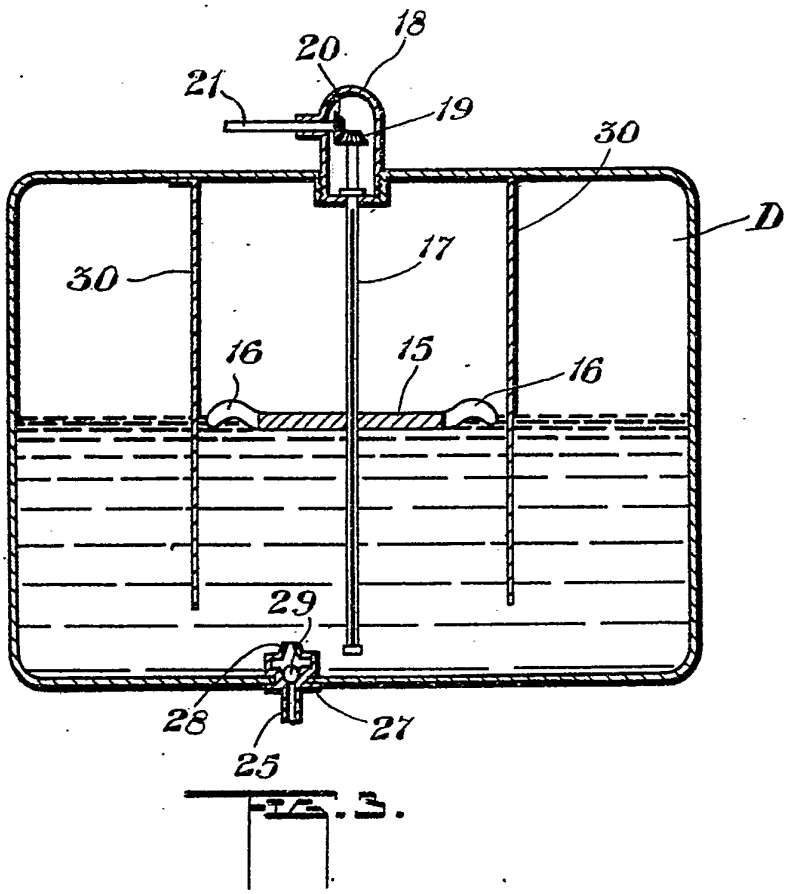

FIG. 3.

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2 SHEETS

SHEET 1

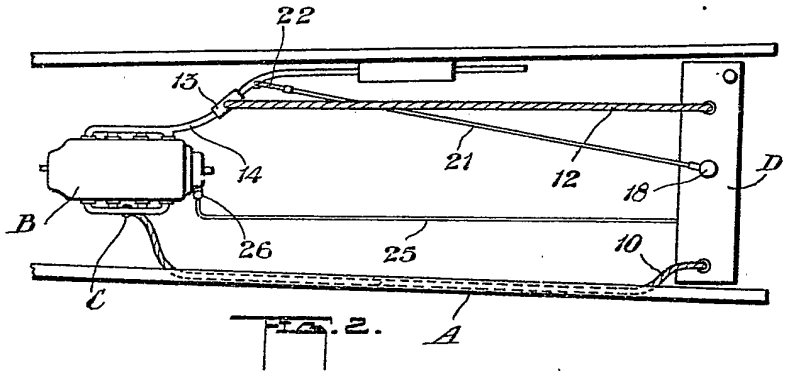

FIG. 2.

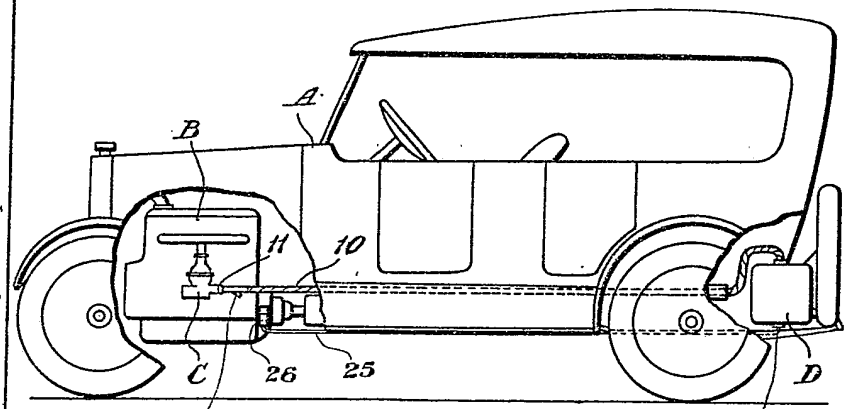

FIG. 1.

SHEET 2

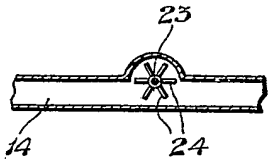

FIG. 4.

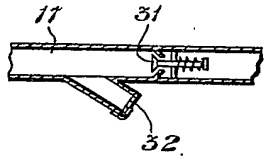

FIG. 5.

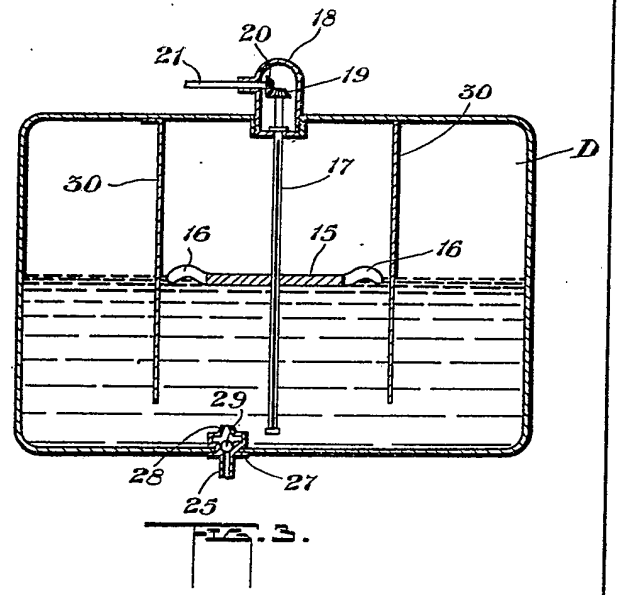

FIG. 3.

[This Drawing is a reproduction of the Original on a reduced scale.]

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