CARBURETTOR

This invention relates to a carburettor construction. An object of the present invention is to provide a carburettor in which the fuel is treated by the hot exhaust fumes of an engine before being combined with air and being fed into the engine.

Another object of the invention is to provide a carburettor as characterised above, which circulates the fume-laden fuel in a manner to free it of inordinately large globules of fuel, thereby insuring that only finely divided and pre-heated fuel of mist-like consistency is fed to the intake manifold of the engine.

The present carburettor, when used for feeding the six-cylinder engine of a popular car, improved the miles per gallon performance under normal driving conditions using a common grade of fuel, by over 200%. This increased efficiency was achieved from the pre-heating of the fuel and keeping it under low pressure imposed by suction applied to the carburettor for the purpose of maintaining the level of fuel during operation of the engine. This low pressure in the carburettor causes increased vaporisation of the fuel in the carburettor and raises the efficiency of operation.

This invention also has for its objects; to provide a carburettor which is positive in operation, convenient to use, easily installed in its working position, easily removed from the engine, economical to manufacture, of relatively simple design and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will appear more fully in the course of the following description and which is based on the accompanying drawings. However, the drawings and following description merely describes one embodiment of the present invention, and are only given as an illustration or example.

DESCRIPTION OF THE DRAWINGS

In the drawings, all reference numbers apply to the same parts in each drawing.
Fig. 1 is a partly broken plan view of a carburettor constructed in accordance with the present invention, shown with a fuel supply, feeding and return system.

The carburettor is preferably mounted on the usual downdraft air tube 5 which receives a flow of air through the air filter. Tube 5 is provided with a throttle or butterfly valve which controls the flow and incorporates a flow-increasing venturi passage. These common features of the fuel feed to the engine intake manifold are not shown since these features are well known and they are also disclosed in my pending Patent application Serial No. 182,420 now abandoned. The present carburettor embodies improvements over the disclosure of the earlier application.

Fig. 2 is a vertical sectional view of the carburettor taken on the plane of line 2--2 in Fig. 1.

Fig. 3 is a partial side elevation and partial sectional view of the carburettor, showing additional structural details.
The present carburettor comprises a housing 6 mounted on air tube 5, and designed to hold a shallow pool of fuel 7, a fuel inlet 8 terminating in a spray nozzle 9, an exhaust gas manifold 10 to conduct heated exhaust gasses for discharge into the spray of fuel coming out of nozzle 9 and for heating the pool of fuel 7 underneath it. Means 11 to scrub the fuel-foams mixture to eliminate large droplets of fuel from the mixture (the droplets fall into pool 7 underneath), a nozzle tube 12 to receive the scrubbed mixture and to pass the mixture under venturi action into air tube 5 where it is combined with air and made ready for injection into the intake manifold of the engine. Pickup pipe 13 is connected to an outlet 14 for drawing excess fuel from pool 7 during operation of the carburettor.

The system connected to the carburettor is shown in Fig.1, and comprises a fuel tank 15, a generally conventional fuel pump 16 for drawing fuel from the tank and directing it to inlet 8, a fuel filter 17, and a pump 18 connected in series between the fuel tank and outlet 14 to place pipe 13 under suction and to draw excess fuel from the carburettor back to tank 15 for re-circulation to inlet 8.

Carburettor housing 6 may be circular, as shown and quite flat compared to its diameter, so as to have a large flat bottom 20 which, with the cylindrical wall 21, holds the fuel pool 7. Cover 22 encloses the top of the housing. The bottom 20 and cover 22 have aligned central openings through which the downdraft tube 5 extends, this pipe forming the interior of the housing, creating an annular inner space 23.

The fuel inlet 8 is attached to cover 22 by a removable connection. Spray nozzle 9 extends through the cover. While the drawing shows spray-emitting holes 24 arranged to provide a spray around nozzle 7, the nozzle may be formed so that the spray is directional as desired to achieve the most efficient interengagement of the sprayed fuel with the heating gasses supplied by the manifold 10.

The manifold is shown as a pipe 25 which has and end 26 extending from the conventional heat riser chamber (not shown) of the engine, the arrow 27 indicating exhaust gas flow into pipe 25. The pipe may encircle the lower portion of the housing 6, to heat the pool of fuel 7 by transfer of heat through the wall of the housing. The manifold pipe is shown with a discharge end 28 which extends into the housing in an inward and upward direction towards nozzle 9 so that the exhaust gasses flowing in the pipe intermingle with the sprayed fuel and heat it as it leaves the nozzle.

The fuel-scrubbing means 11 is shown as a curved chamber 29 located inside housing 6, provided with a series of baffle walls 30 which cause the fumes-heated fuel mist to follow a winding path and intercept the heavier droplets of fuel which then run down the faces of the baffle walls, through openings 31 in the bottom wall 32 of scrubbing chamber 29 into the interior space 23 of housing 6 above the level of the fuel pool 7.

Pickup pipe 13 is also shown as carried by housing cover 22 and may be adjusted so that its lower open end is so spaced from the housing bottom 20 as to regulate the depth of pool 7, which is preferably below the bottom wall 32 of the scrubbing chamber 29. Since this pipe is subject to the suction of pump 18 through outlet 14 and filter 17, the level of pool 7 is maintained by excess fuel being returned to tank 15 by pump 16.

It will be seen that the surface of pool 7 is subject not only to the venturi action in tube 5, but also to the suction of pump 18 as it draws excess fuel back to fuel tank 15. Thus, the surface of the pool is under somewhat less than atmospheric pressure which increases the rate of vaporisation from the pool surface, the resulting vapour combining with the flow from the scrubbing chamber to the downdraft tube 5.

While this description has illustrated what is now contemplated to be the best mode of carrying out the invention, the construction is, of course, subject to modification without departing from the spirit and scope of the invention. Therefore, it is not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications which may fall within its scope.