

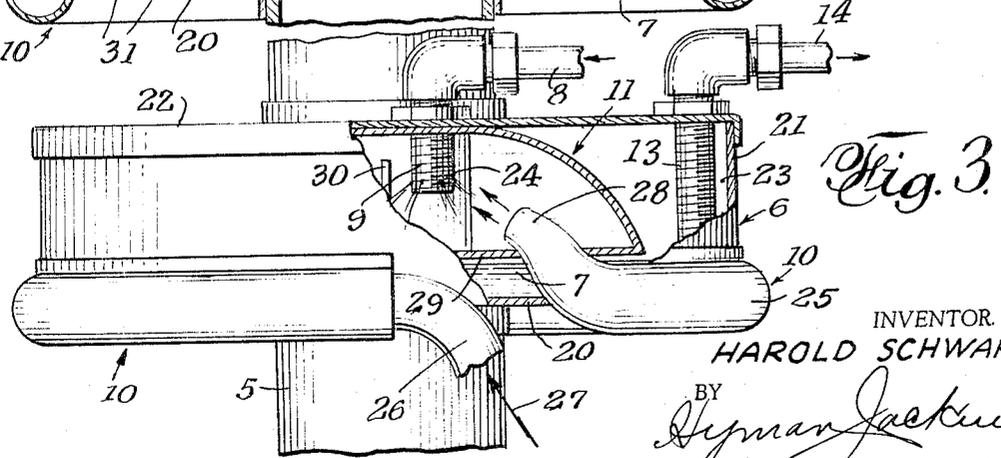
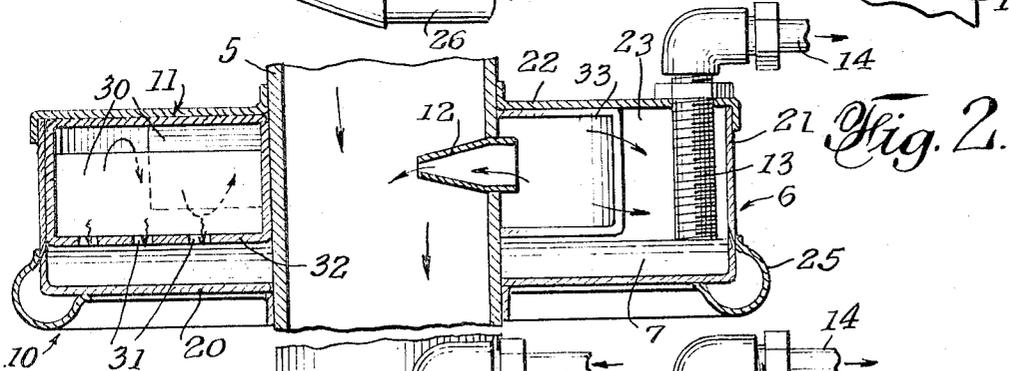
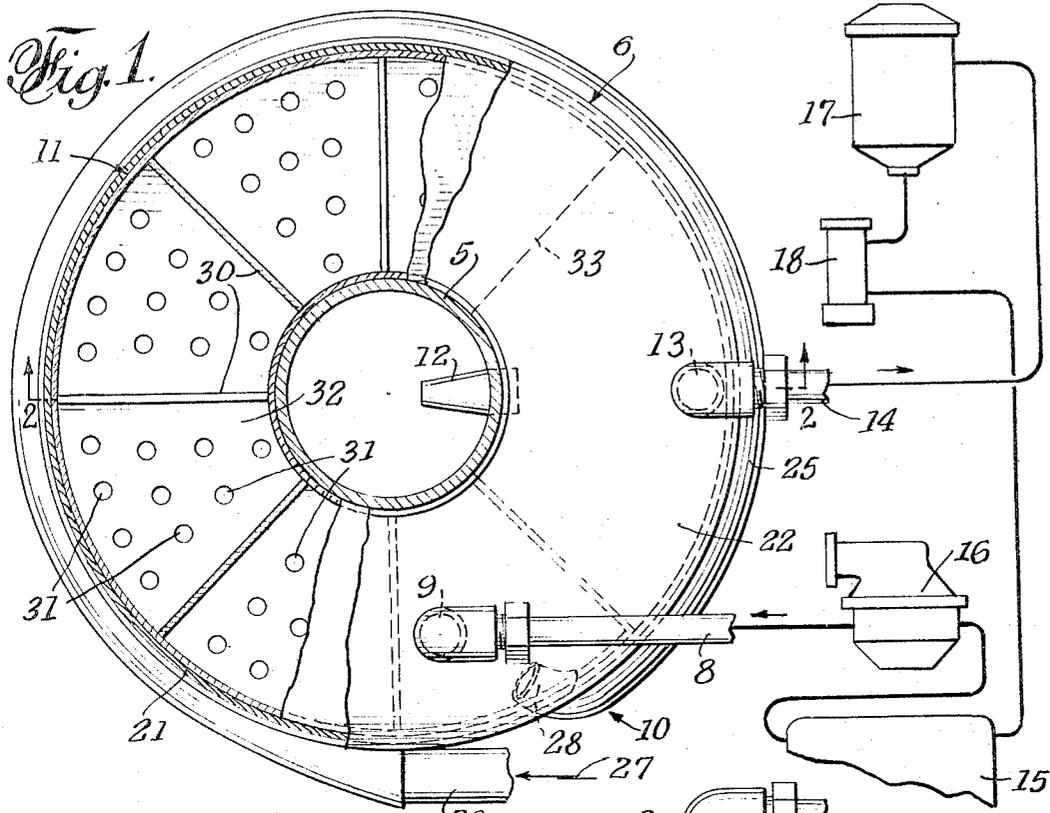
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CARBURETOR

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**CARBURETOR**

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This invention relates to a carburetor construction.

An object of the present invention is to provide a carburetor in which the fuel, before the same is combined with air and fed to an internal combustion engine, is treated by the hot exhaust fumes of said engine to increase its burning efficiency in the cylinders of said engine.

Another object of the invention is to provide a carburetor, as above characterized, that circulates the fumes-laden fuel in a manner to free the same of inordinately large globules of fuel, thereby insuring that only finely divided and pre-heated fuel of mist-like consistency is directed to the engine intake manifold.

The present carburetor, when used for feeding the cylinders of a six-cylinder engine of a popular automobile, improved the miles per gallon performance of said engine, during ordinary driving conditions, over 200%, a common grade of gasoline being used, the efficiency achieved resulting from the mentioned pre-heating of the fuel and because the same is kept under low pressure imposed by suction applied to the carburetor for the particular purpose of maintaining the level of fuel constant during engine operation. Such low pressure in the carburetor causes increased vaporization of the fuel in the carburetor and increased efficiency of operation.

This invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

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

In the drawing, like reference characters designate similar parts in the several views.

FIG. 1 is a partly broken plan view of a carburetor according to the present invention, the same being shown in operative association with a fuel supply, feeding and return system.

FIG. 2 is a vertical sectional view of the carburetor as taken on the plane of line 2—2 of FIG. 1.

FIG. 3 is a partial side elevation and partial sectional view of said carburetor showing additional structural details.

The present carburetor is preferably mounted on the usual downdraft air tube 5 that receives a flow of air from atmosphere by way of an air cleaner, said tube 5, in any usual way, being provided with a throttle or butterfly valve that controls flow and is formed to have a flow-increasing Venturi passage. The above common features of the fuel feed to the intake manifold of an internal combustion engine are not shown; first, because the same are old and well known and, second, the same are disclosed in applicant's pending application, Serial No. 182,420, bearing the same title, now abandoned. The present carburetor embodies improvements over the disclosure of the earlier application.

The present carburetor comprises a housing 6 mounted on said 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 gases for discharge into the spray of fuel emanating from the nozzle 9 and for heating said pool of fuel 7, means 11 to scrub the fuel-fumes mixture to eliminate large droplets of fuel from said mixture (which fall into the pool 7 therebeneath), a nozzle tube 12 receptive of said scrubbed mixture and passing the same under Venturi action into air tube 5 combined with air in said tube for passage to the intake manifold of an engine, and a pickup pipe 13 connected to an outlet 14 for drawing excess fuel from the pool 7 during operation of the carburetor.

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

The carburetor housing 6 may be circular, as shown, and quite flat compared to the diametral size, so as to have a large flat bottom 20 that, with the cylindrical wall 21, holds the fuel pool 7. A cover 22 encloses the top of the housing. The bottom 20 and cover 22 have aligned central openings through which the down draft tube 5 extends, said pipe thereby forming the interior of the housing to have an annular inner space 23.

The fuel inlet 8 is separably secured to the cover 22 with the spray nozzle 9 thereof extending through said cover. While shown with spray-emitting holes 24 arranged to provide a spray around the nozzle 7, the nozzle may be formed so the spray is directional as desired, for most efficient interengagement of the sprayed fuel with the heating gases supplied by the manifold 10.

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

The fuel-scrubbing means 11 is shown as an arcuate chamber 29 disposed within the housing 6, the same being provided with a complement of baffle walls 30 that causes the flow of fumes-heated misty fuel to follow a serpentine path that intercepts the heavier globules of fuel so the same may run down the faces of said walls, through openings 31 in the bottom wall 32 of the scrubbing chamber 29, and into the pool 7. Thus, only the finer globules of the heated fuel emanate from the open end 33 of the chamber 29 into the interior space 23 of the housing 6 above the level of the pool 7. This fuel, by the suction action thereon through the nozzle tube 12 due to the Venturi action in the downdraft tube 5, is drawn into the air flow in the latter tube to carburize said flow of air. The same then proceeds to the engine for combustion therein in the usual manner.

The pickup pipe 13 is also shown as carried by the housing cover 22 and may be adjusted so its lower open end is so spaced from the housing bottom 20 as to regulate the depth of the pool 7, which is preferably below the bottom wall 32 of the scrubbing chamber 29. Since this pipe is subject to the suction of the pump 18 through the outlet 14 and filter 17, the level of the pool 7 is maintained by a return to the tank 15 of excess fuel for subsequent pre-heating and scrubbing, as above described, when fed by pump 16 to the nozzle 9.

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It will be seen that the surface of the pool 7 is subject not only to the Venturi action in tube 5, but also to the suction of the pump 18 as the same draws fuel back to the supply tank. Thus, the surface of the pool is under pressure somewhat less than atmospheric. Hence, the vaporization of the pool surface is increased, the resulting vapors combining with the flow from the scrubbing chamber to the downdraft tube 5.

While the foregoing has illustrated and described 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 that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. A carburetor for an internal combustion engine having an exhaust and an intake manifold, and a downdraft tube leading to said intake manifold, comprising:

- (a) a housing having a flat, horizontal bottom and adapted to hold a shallow pool of fuel, said housing encircling said downdraft tube and mounted thereon,
- (b) an arcuate scrubbing chamber in said housing open at one end and closed at its other end to the interior of the housing and having a top and bottom spaced above the housing bottom provided with holes open to the pool of fuel,
- (c) a complement of radial baffles in said scrubbing chamber in arcuate arrangement and mounted vertically between the top and bottom of said scrubbing chamber,
- (d) a liquid fuel inlet terminating in a spray nozzle discharging into said scrubbing chamber adjacent its closed end,
- (e) means to conduct exhaust gases of said engine into said scrubbing chamber, said means terminating in a discharge for said exhaust gases directed toward said nozzle to commingle with the sprayed fuel emanating therefrom, thereby to produce a flow of

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fumes-laden finely-divided fuel that includes larger globules and means positioning said baffles so the fumes flow in a serpentine path toward the open end of the chamber around and in contact with said baffles so the larger globules are intercepted and run down the faces of the baffles and discharged through the holes in the chamber bottom and into the mentioned pool of fuel in the housing,

- (f) a pickup pipe for drawing excess fuel from the pool with its pickup end located in spaced relation to the housing bottom but closer thereto than is the bottom of the scrubbing chamber, thereby maintaining the level of the pool below said chamber bottom,
- (g) the remainder of the fumes-laden fuel discharging from said open end of the scrubbing chamber into the housing, and
- (h) a nozzle tube intersecting the downdraft tube open to said fumes-laden fuel in the housing and directed to discharge the same into a flow of air in said downdraft tube to provide a combustible fuel mixture.

2. A carburetor according to claim 1 in which the means for conducting the exhaust gases comprises a pipe in heat-exchange engagement with the housing to heat the fuel forming the pool therein to increase vaporization of the surface of said pool.

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