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CARBURETOR

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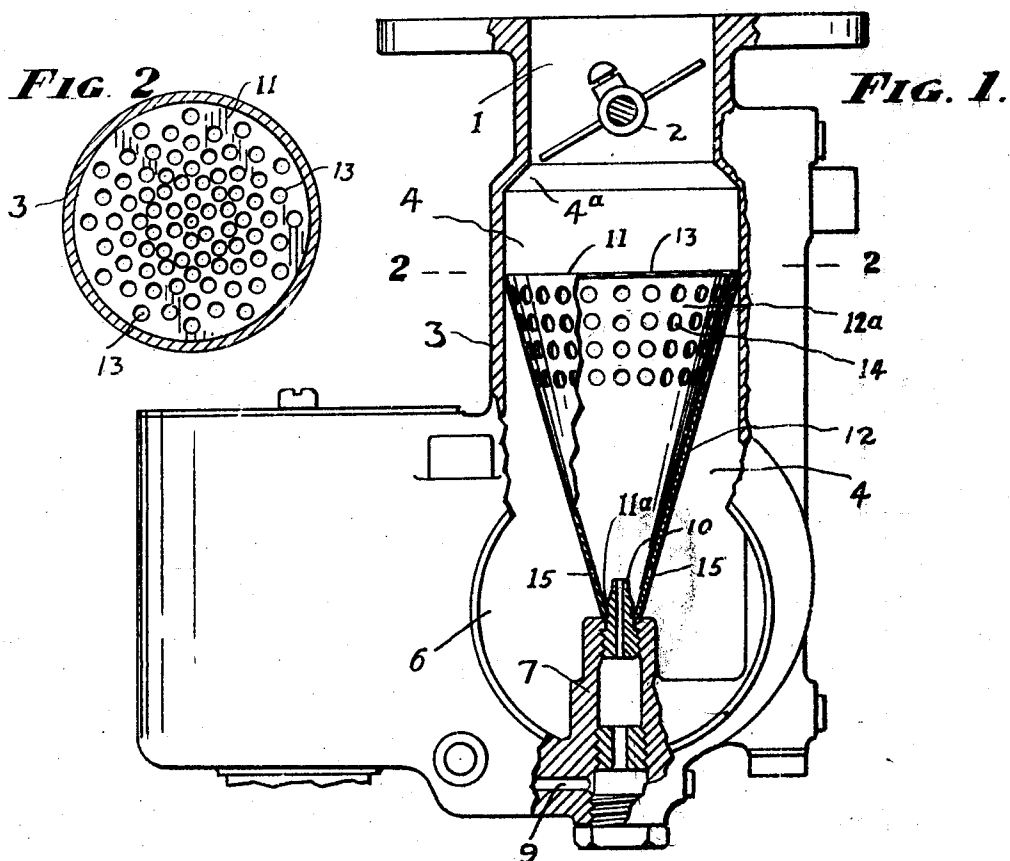
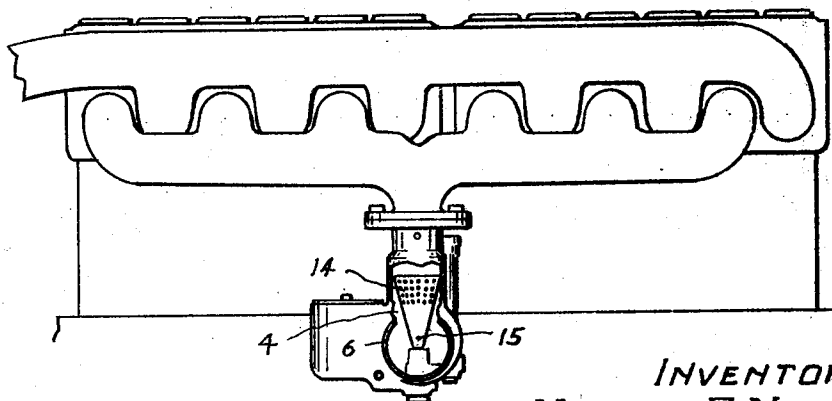


FIG. 3.



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CARBURETOR

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This invention relates to improvements in carburetors, and has reference more especially to devices of this class which are intended for internal combustion engines of the type used in automobiles, such engines being subject to operation at varying speeds.

Gasoline being more responsive to suction than is air, there has long been the problem of overcoming the tendency of the fuel mixture to become too rich in gasoline content as the suction energy acting through the fuel chamber is increased by the speeding engine.

An advantage sought for in carburetion for engines of the class referred to, is that the fuel mixture supplied for the values of the engine cylinders, may be of balanced consistency regardless of the variation of the engine speed.

I am aware that in the effort to improve carburetion, means have been arranged within the carburetor, and within the manifold, for baffling, breaking up, mixing and diffusing the fuel elements; and also that secondary jets open to the air have been compounded with the gasoline jet. Such devices and arrangements, however, have not been found satisfactory, for the reason it is thought, that whereas the fuel elements may be well broken up, intermingled and diffused, there remains the ever present tendency of the fuel to become too rich in gasoline content, coincidently with the speeding of the engine, the air entering the intake, having unrestricted flow and sweep by the suction directly through the fuel chamber.

Some of the results incident to the introduction into the engine of such unbalanced mixture, are unsteady engine speed and power, abnormal wear of moving parts, waste of fuel, and carbonizing of the valve and cylinder cavities.

In the present invention I propose to effect, directly inside the carburetor, the flow of the gasoline and of the air, in such manner that while not impeding the inflow to the carburetor of these two elements, there is overcome the tendency of a too accelerated flow of gasoline during increase of suction energy.

The preferred form of embodiment of my invention, consists of the new construction, combination, and arrangement of parts described in the following specification, and illustrated in the accompanying drawings. The several parts of the invention are identified by suitable characters of reference applied to them in the different views in which—

Figure 1 is a side view of a carburetor structure in which my invention is embodied, portions of the wall of the fuel chamber being broken away, disclosing to view the several parts of the invention.

Figure 2 is a sectional top plan view taken on the line 2—2 in Figure 1.

Figure 3 is a side view, showing the relative positions of the carburetor and the intake manifold through which the fuel is carried to the engine.

The invention is shown applied to practice in connection with a carburetor construction of the generally well known type which comprises the usual fuel chamber, a single air inlet, and a single gasoline jet, and it contemplates the providing of a compartment adapted to be retained within the fuel chamber and having a mouth into which the gasoline jet is projected, there being perforations in the portions of the compartment distant from the mouth, and a relatively small opening or openings in the portion of the compartment adjacent to the mouth thereof.

In the carburetor structure shown, the outlet 1, in which is operated the usual throttle valve 2, is one and one-half inches in diameter. The body portion 3 is cylindrical in cross section, and constitutes the fuel chamber 4, the diameter thereof being greater than the diameter of the outlet 1, and the annular beveled top portion 4a thereof constituting a flared mouth for the outlet 1. 6 designates the air intake opening, and 7 designates the usual gasoline inlet tube. Gasoline from the cup portion of the carburetor enters the tube 7 through the usual channel 9. At the outlet end of the tube 7 is provided the usual nozzle 10.

In combination with the fuel chamber and the said nozzle, I provide a compartment de-

vice of the formation of an inverted cone and made of light sheet metal, preferably copper or brass. The base portion 11 of this compartment is of diameter to span the diameter of the fuel chamber, and the apex portion of the compartment is provided with a mouth 11a through which the nozzle 10 is projected.

In the base portion 11, and the portions 12a of the walls 12 of the compartment device, are provided perforations 13 and 14 respectively. The aggregate area of the aforesaid perforations is equal to an area not less than the cross section area of the outlet 1 of the fuel chamber, to permit of the flow freely from below of the maximum content capable of passing through the said outlet. The longitudinal extent of the area having the perforations 14, is about one-third of the length of the compartment.

At locations relatively near the mouth 11a, I provide an aperture or apertures 15. These apertures are relatively small, and serve to permit of the ingress and egress of air in relatively small volume. Whereas in carburetors as heretofore devised, the air flow proceeds directly through the chamber area, and in direct proximity with the gasoline nozzle, and carrying the spray forwardly, a distinguishing feature of my invention is that the suction energy is controlled so that tendency of the gasoline flow to become accelerated with increasing suction is avoided.

In the operation of my invention there is the usual intake and inflow of the air through inlet 6, and through the chamber 4, and the entry of the gasoline through nozzle 10. It is considered that as the air is drawn by the suction, through the perforations 13 and 14, and outlet 1, there is caused within the lower portion of the compartment device, a partial vacuum.

Such function is performed by the compartment device, that while the flow of the gasoline through the nozzle 10 is free, and the suction energy of the engine is operating with full force through the air inlet 6, the suction force operating in the lower portion of the compartment device is of relatively less degree.

Although the increasing force of the suction incident to speeding of the engine, draws through the outlet 1 and into the manifold a ration of increased amount, there is not a too rapid response of gasoline. To the contrary, the suction so operates that without stifling or restricting the feed of the gasoline, the passing of the gasoline too rapidly is prevented.

Results of my invention are that while with the opening of the throttle the engine is provided with a fuel ration of increased quantity, this ration is of the balanced consistency formed within the carburetor. Moreover, the fuel composition leaving the

carburetor will have been thoroughly mixed and homogenized. By thus obtaining a well balanced fuel composition, and being enabled to have such composition or mixture flowing uniformly, and being thoroughly homogenized before its entry into the manifold, there is the saving of fuel, and the increase of power at the same time.

The invention is economical of manufacture, and is not liable to become deranged or to get out of repair. I am aware that modifications may be made in the detailing of the several parts in conformity with conditions incident to providing the invention for engines of varied sizes and capacities, and in carburetors of varied structure. I wish the invention to be construed as broadly as possible, within the scope thereof as defined in the appended claims.

What I claim as my invention and desire to secure by Letters Patent is—

1. In a carburetor, having its air intake opening intercommunicating with the fuel chamber, a cone shaped compartment device retained with its base portion adjacent to the outlet and to span the bore of the fuel chamber, the head portion of the compartment device having a mouth into which the gasoline nozzle of the carburetor projects there being perforations in the base portion and in the portions of the walls adjacent to the base portion of the compartment, and there being apertures of relatively small size near the said mouth.

2. In a carburetor, a fuel chamber of diameter in cross section greater than the diameter of the outlet thereof, a coneshaped compartment device retained with its base portion to span the bore of the fuel chamber, and its head portion having a mouth into which the gasoline nozzle of the carburetor projects there being perforations in the base portion and in the portion of the walls adjacent to the base portion of the compartment, and there being apertures of relatively small size near the said mouth.

3. In a carburetor having its air intake opening intercommunicating with the fuel chamber, a compartment device having convergent sides, and at the peak portion thereof there being a mouth into which the gasoline nozzle of the carburetor discharges, the base portion of the compartment and the portions of the walls adjacent thereto being provided with perforations, and there being apertures of relatively small size near said mouth.

In testimony whereof I affix my signature.
HENRY F. NELSON.