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CARBURETOR

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Fig. 1.

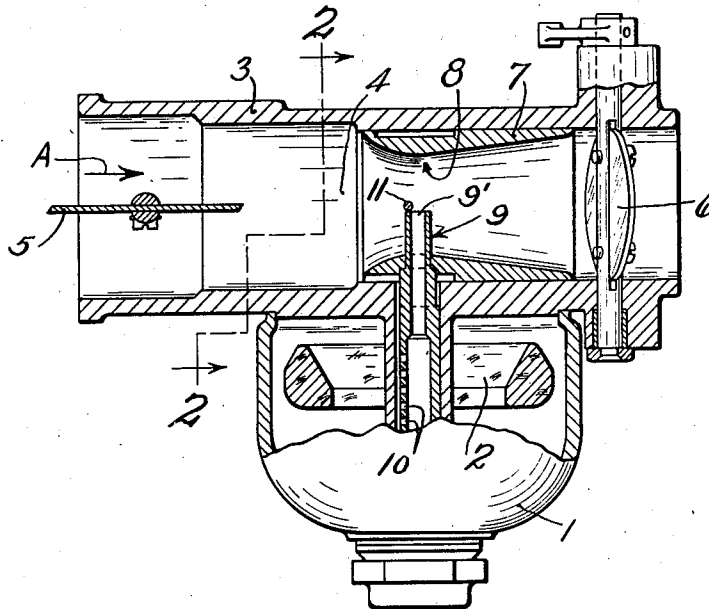
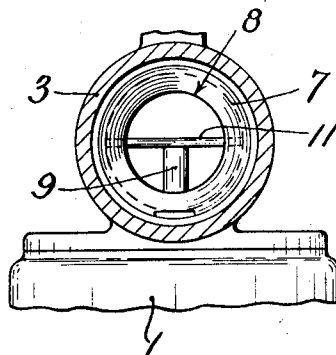


Fig. 2.



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CARBURETOR

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1 Claim. (Cl. 261—78)

This invention relates to carburetors for internal combustion engines and has for its object an improvement in the efficiency of the same. This improved efficiency is attained by the provision of means in said carburetor which facilitate the breaking up and dispersion of the liquid fuel for obtaining a more rapid and thorough vaporization and mixing of the same with air. The advantages of the present improvement are more appreciable when the device is employed with carburetors having a relatively short run from the mixing chamber to the inlet ports of the engine. Under such circumstances, if the liquid fuel and air are not properly mixed for best power efficiency, very quickly after being brought together, there generally is not time for a more thorough dispersion on the way to the inlet ports of the engine, with the result that there is a waste of fuel during most of the running time of the engine. Such conditions of a relatively short passage from carburetor through manifold to inlet valves frequently prevail in connection with motorcycle engines, and it is in a carburetor of the type generally used on motorcycle engines that the invention is herein illustrated.

With reference to the accompanying drawing which shows the preferred embodiment of the invention,

Fig. 1 is a longitudinal section of a plain tube type carburetor taken through its barrel and bowl portion and showing the present improvement incorporated therein; and

Fig. 2 is the transverse section of the barrel portion of the carburetor along line 2—2 of Fig. 1.

It will be understood that only sufficient portions of the carburetor are herein illustrated as will suffice to show the manner in which the present invention is employed. In a common type of carburetor used with motorcycle engines the bowl 1 provides the usual liquid fuel chamber having the float 2 therein. Lying across the top of said bowl in horizontal position is the barrel portion 3 through which extends the air passage 4 comprising the mixing chamber of said carburetor, the flow therethrough being in the direction of the arrow A. The usual choke valve 5 may be mounted at the inlet end of said air passage and throttle valve 6 at the outlet end thereof which delivers into the intake of the engine not shown. Within the mixing chamber part of the air passage is mounted the Venturi tube 7 to provide a constricted throat at 8 for the high velocity and low pressure condition of the air flow as is usual.

Leading upwardly from the liquid fuel chamber

1 and projecting laterally through the barrel 3 into the constricted throat 8 is fuel nozzle 9 having its discharge opening 9' pointing into the air passage 4, 8 substantially at right angles to the direction of air flow therethrough. In other words this nozzle opening 9' faces across the air passage. As shown the nozzle opening 9' is located approximately at the longitudinal axis of the air passage 4. It is not essential that it be located precisely at said axis but is preferably located in that vicinity. It will be understood that the interior bore of this fuel nozzle is in communication with the liquid within the fuel chamber by suitable ports which are controlled by one or more needle valves, not shown. Air bleed passages 10 into the bore of said fuel nozzle 9 may also be provided as shown, and for the purpose well understood. While I have shown nozzle 9 as of the usual aspirating type, this is not essential but merely exemplary of a successfully operative combination. A fuel tube discharge, supplied in any other manner will also be suitable for combination with my improved feature.

A small round wire serving as a fuel dispersion means 11 is mounted with its ends anchored in the sides of the Venturi tube 7 and said wire extends transversely of said tube at about the level of its longitudinal axis or middle point. In the structure shown, the location of the fuel dispersion wire 11 is preferably such that it tangentially contacts with the windward or upstream side of the nozzle discharge opening 9' with a substantial part of its thickness lying above the opening as shown in the figures of the drawing. The diameter of this wire baffle is preferably small in comparison with the inner diameter of the air passage or Venturi tube 8. For satisfactory results the obstructive thickness or diameter of the wire 11 may approximate the size of the nozzle discharge opening 9' or something in that order. In the embodiment shown in the drawing, the diameter of the Venturi throat 8 is about $\frac{1}{8}$ "'; that of the nozzle discharge opening is about $\frac{1}{8}$ "'; and that of the baffle wire 11 is about $\frac{1}{16}$ ". These dimensions need not be rigidly adhered to and are given for illustrative purposes only.

The wire 11 serves as a fuel dispersion means, as stated, in obstructing the flow of air immediately adjacent the windward side of the nozzle opening 9' and creates in the neighborhood of the nozzle an area of burbling turbulence and dispersion, and possibly of slightly decreased pressure, which area of disturbance extends out laterally along the wire from each side of the

discharge opening. As a result of this disturbed area on the lee side of the wire 11, the globules of liquid fuel issuing from the discharge opening of the nozzle tend to be strung out along the leeward side of the wire 11 from side to side of the air passage at 8 and from which said globules are finally torn away into smaller particles for more easy and rapid vaporization and mixture with air. The foregoing is presented merely as a possible theory that may be advanced for the remarkable results which flow from the use of the above described device on a motorcycle engine carburetor.

I claim:

In a carburetor in combination a liquid fuel chamber, a Venturi air passage in which the fuel and air are mixed, a conduit leading from said fuel chamber comprising a fuel nozzle projecting into said air passage from one side thereof and having its discharge opening approximately at the longitudinal axis of said air passage, and a wire extended diametrically across said air passage at right angles to said fuel nozzle and in tangential contact with the upstream side of said nozzle discharge opening.

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