

MOTORS AND MOTORING:

A Page Full of Interest to the Owner or Prospective Owner of an Automobile.

WHAT CARBURETOR DOES FOR ENGINE

Has Been Developed to Overcome One Law of Nature—Has Constant Mixture

The carburetor is the device which sprays the gasoline and mixes it with the necessary amount of air to make it burn in the combustion chamber of the engine very rapidly and with intense heat. This action is frequently spoken of as an explosion but in fact, it is not; it is simply rapid burning. The power in the gas engine is derived from the pressure caused by the great heat generated by the burning of the air mixed with the gasoline; it is not an explosion, but an expansion.

One cubic inch of liquid gasoline mixed with 8,500 to 10,000 cubic inches of air makes a mixture which burns with a most intense heat, thus giving very high pressure in the cylinders and doing the most work. The temperature of the burning mixture frequently rises as high as 2,700 degrees Fahrenheit, and this gives a pressure of more than 350 pounds to the square inch. This pushes upon the piston and makes the engine work.

Inside of the carburetor the gasoline is sprayed in about the same way that perfumery is sprayed by an atomizer. In fact the gasoline and air mixture has the same appearance as it leaves the carburetor and is carried through the passage (manifold) to the cylinders as the fine vapor from an atomizer or throat sprayer.

The spraying of the gasoline and mixing it with air is caused by the air rushing in through the carburetor to fill the cylinder as the piston moves outward and creates a vacuum on the intake stroke, and if the speed of the engine was the same at all times there would be no trouble with carburetion. One of the laws of nature is that the faster air moves over a nozzle containing liquid the richer the mixture becomes, or the more liquid is taken up. The carburetor has been developed to overcome this law of nature and give a constant mixture at all engine speeds.

An automobile engine runs from about 200 revolutions to over 3,000 revolutions a minute and at high speed with an open throttle the air and gasoline mixture passes through the intake manifold at a speed of a mile a minute in some engines. The carburetor must supply a mixture at all speeds that has the proper proportions of air and gasoline. To accomplish this almost impossible feat, many different devices have been put on the market during the past twenty years, but about all that was done in the first half of that time was to prove that each device was imperfect and to point the way toward efficiency.

A carburetor must have a cup or bowl in which a certain quantity of gasoline is maintained. This is done by using a float which stops the gasoline from flowing by pushing a little plug into the end of the pipe which carried the gasoline from the tank or reservoir to the bowl of the carburetor. From the float chamber there is a passage which permits the gasoline to flow to a nozzle which is inside of the passage through which the air rushes to the cylinder. The level of the gasoline in the float chamber is just below the top of the nozzle so no gasoline can run out of the nozzle when the engine is not working, but is high enough so that as soon as the piston moves and creates a vacuum, the gasoline flows out and mixes with the air on the way to the cylinder. In many carburetors there is a means of adjusting the

nozzle so more or less gasoline can flow through it.

When the engine speeds up, the mixture through this device is too rich, too much gasoline for the quantity of air, and to overcome this tendency of the mixture to become richer, many different things have been tried. Among the most common means of thinning the mixture at high speed is to supply an opening in which there is a large air valve, held closed by a spring. As the engine speeds up, the increased vacuum causes the valve to open and permit air to flow into the carburetor and thin out the mixture which is too rich. By adjusting the stiffness of the spring a certain amount of control over the mixture is obtained at quite a wide range of engine speed. Practically all carburetors up to about eight or nine years ago embodied this principle in a more or less comprehensive manner, and even today there are some carburetors still making use of it.

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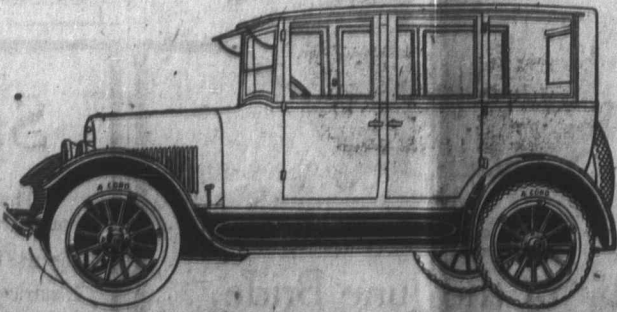
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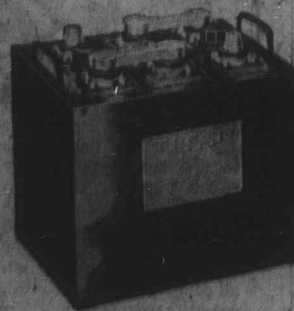
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