Carburetor Encyclopedia Article

Carburetor

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Carburetor

The carburetor was a critical invention in the advancement of the gas engine and its adaptation to the motor car. The carburetor allowed the use of gasoline as a fuel, which replaced vaporous gas(the "illuminating gas" that was used for street lights) as the source of power for internal combustion engines.

The modern carburetor was invented by German engineer, Wilhelm Maybach, an associate of Gottlieb Daimler. Together these two men developed one of Europe's first automobiles, powered by a two-cylinder engine fitted with Maybach's carburetor. Their car was first driven in 1885.

Maybach's design consisted of a spray nozzle that released a fine mist of gasoline which was then mixed with about 15 times its weight in air to produce a combustible mixture. This fuel-air mixture was drawn into the engine by the downward action of the piston and admitted into the combustion chamber by the opening of the intake valve at precisely the proper moment. Maybach's early carburetor was regulated by two screws. The first regulated the amount of gasoline, the second, the amount of air. This design, while functional, did not allow for easy variations in the fuel-air mixture; hence, engine speed was hard to regulate. Carl Benz, another German inventor, solved this problem in 1893. Benz invented the carburetor butterfly valve which is situated below the spray nozzle in the tube that connects the carburetor and the engine. This butterfly valve can be turned to vary the fuel-air mixture. Consequently, engine speed and power can be easily regulated.

Other refinements of the carburetor include the choke valve, which is closed to start a cold engine. The choke is essentially another butterfly valve, but this valve is situated *above* the spray nozzle mechanism. Closing the choke restricts the flow of air to the engine and results in a richer mixture of gasoline that is easier for the spark plug to ignite in a cold engine. Chokes today are automatically controlled by engine temperature.

More than one spray nozzle-butterfly valve combination can be incorporated into a single carburetor, resulting in a two-barrel or a four-barrel carburetor. Cars designed for racing may be outfitted with more than one of these multi-barreled carburetors. Modern carburetors are built with several innovations designed to burn the fuel-air mixture more efficiently so as to reduce polluting exhaust emissions.