the metering head of ¼ pound (for the ¼ pound pressure differential created by the venturi).

The same ratio of pressure drop across the jet to venturi suction applies throughout the range. Any increase or decrease in fuel inlet pressure tends to upset the balance in the various chambers in the manner already described. When this occurs, the main fuel regulator diaphragm assembly repositions to restore the balance.

The mixture control, whether operated manually or automatically, compensates for enrichment at altitude by bleeding impact air pressure into chamber B, thereby increasing the pressure (decreasing the suction) in chamber B. Increasing the pressure in chamber B tends to move the diaphragm and poppet valve more toward the closed position, restricting fuel flow to correspond proportionately to the decrease in air density at altitude.

The idle valve and economizer jet can be combined in one assembly. The unit is controlled manually by the movement of the valve assembly. At low airflow positions, the tapered section of the valve becomes the predominant jet in the system, controlling the fuel flow for the idle range. As the valve moves to the cruise position, a straight section on the valve establishes a fixed orifice effect which controls the cruise mixture. When the valve is pulled full-open by the throttle valve, the jet is pulled completely out of the seat, and the seat side becomes the controlling jet. This jet is calibrated for takeoff power mixtures.

An airflow-controlled power enrichment valve can also be used with this carburetor. It consists of a spring-loaded, diaphragm-operated metering valve. Refer to *Figure 2-29* for a schematic view of an airflow power enrichment valve. One side of the diaphragm is exposed to unmetered fuel pressure and the other side to venturi suction plus spring tension. When the pressure differential across the diaphragm establishes a force strong enough to compress the spring, the valve opens and supplies an additional amount of fuel to the metered fuel circuit in addition to the fuel supplied by the main metering jet.

Accelerating Pump

The accelerating pump of the Stromberg PS carburetor is a spring-loaded diaphragm assembly located in the metered fuel channel with the opposite side of the diaphragm vented to the engine side of the throttle valve. With this arrangement, opening the throttle results in a rapid decrease in suction. This decrease in suction permits the spring to extend and move the accelerating pump diaphragm. The diaphragm and spring action displace the fuel in the accelerating pump and force it out the discharge nozzle.

Vapor is eliminated from the top of the main fuel chamber D through a bleed hole, then through a vent line back to the main fuel tank in the aircraft.

Manual Mixture Control

A manual mixture control provides a means of correcting for enrichment at altitude. It consists of a needle valve and seat that form an adjustable bleed between chamber A and chamber B. The valve can be adjusted to bleed off the venturi suction to maintain the correct fuel/air ratio as the aircraft gains altitude.

When the mixture control lever is moved to the idle cutoff position, a cam on the linkage actuates a rocker arm which

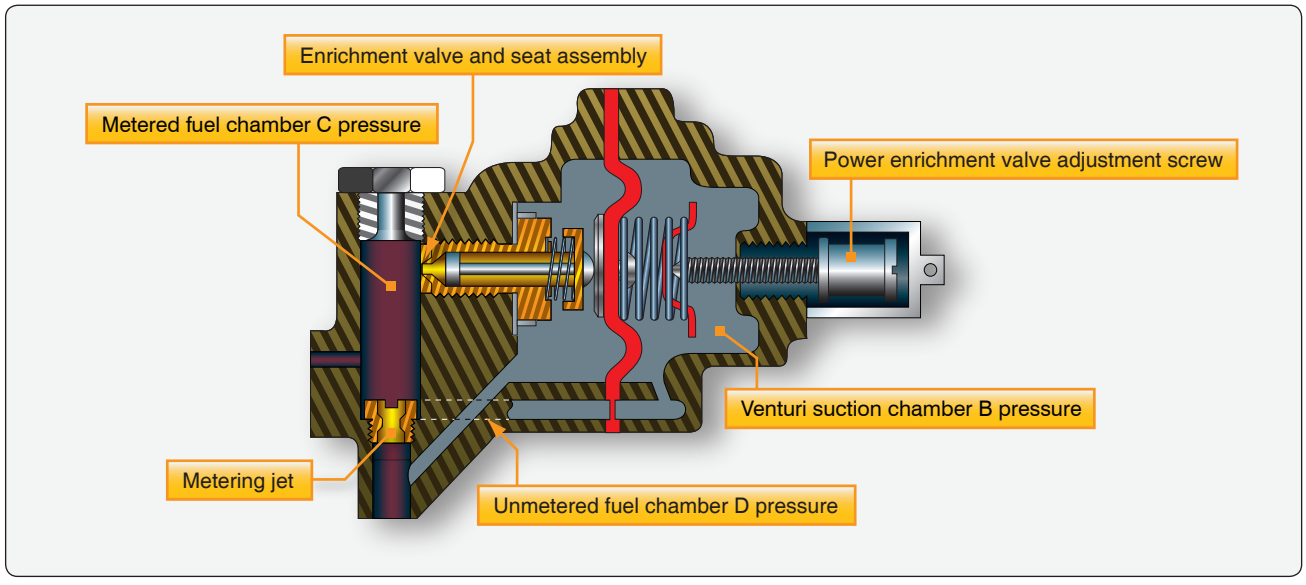

Figure 2-29. *Airflow power enrichment valve.*