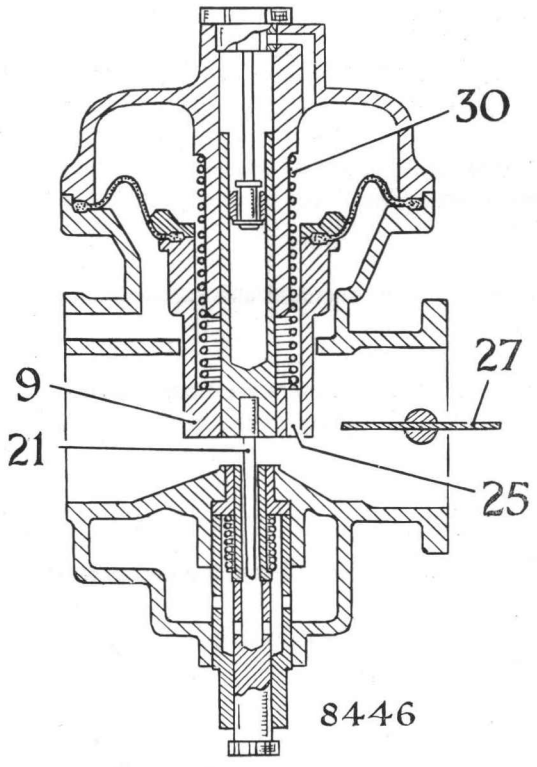

Fig. 6. *Full throttle operation—low engine speed*

piston ceases to rise when the air speed below the piston just maintains the depression needed above the diaphragm for the air valve piston assembly to "float" on air pressure.

When the throttle is moved open further air speed under the air valve piston (9) and depression above the diaphragm (3) are increased as THE ENGINE SPEED INCREASES, causing the air valve piston to lift until the air pressure and depression again stabilise so that the piston "floats" in a higher position.

Further movement of the throttle to its fully open position causes the air valve piston to rise by the same means as before and to "float" in its maximum lift position shown in Fig. 7 IF THE ENGINE SPEED CONTINUES TO RISE. Figs. 5, 6 and 7 show the approximate positions taken by the air valve piston (9) for part throttle opening at moderate engine speed, full throttle opening at low engine speed and full throttle opening at high engine speed. From these illustrations it can be seen that the air valve piston position is dependent upon the amount (weight) of air that the engine can draw through the throttle opening, and that a high air speed and almost constant depression will always exist at the fuel discharge annulus where the needle enters the jet.

The air valve piston movement is also controlled slightly by the compression spring (30). This spring is identified from the details given under "Fuel System" in the General Data Section. If replaced an exactly similar spring must be fitted.

Acceleration (See Fig. 1)

When the throttle is opened suddenly at low speeds the sudden inrush of air can immediately weaken the mixture. This is overcome by damping the upward movement of the air valve piston so that there is a temporary increase of fuel discharge from the jet (24) due to the increase of depression existing on the jet, while the air valve piston movement is controlled by the hydraulic damper (1) action. When the piston reaches the position given by air pressure lift against the depression in the depression chamber, the jet (24) discharge returns to normal. Downward movement of the piston is not restricted by the action of the hydraulic damper.

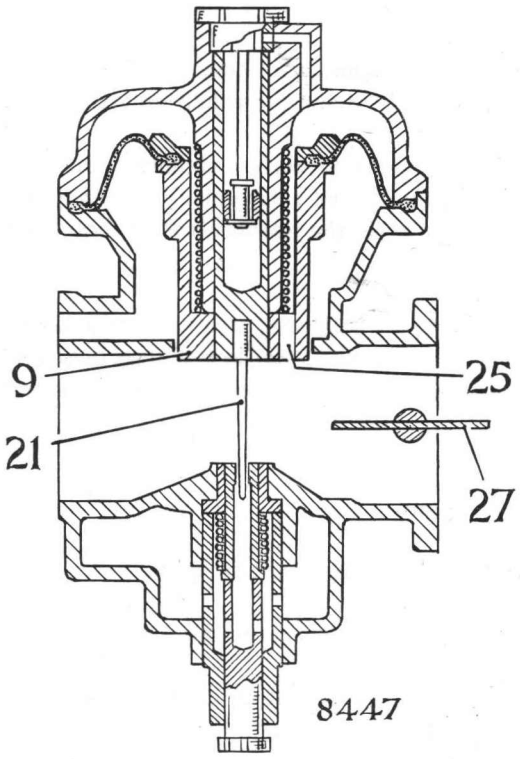

Fig. 7. *Full throttle operation—high engine speed*