Sept. 29, 1936.

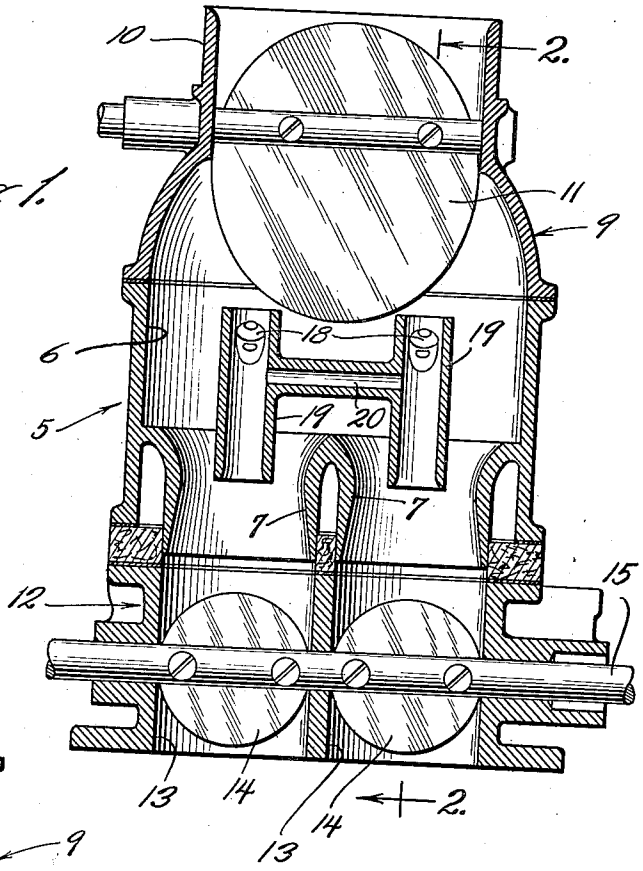
D. FIRTH

2,055,925

CARBURETOR

Filed May 31, 1934

Fig. 1.



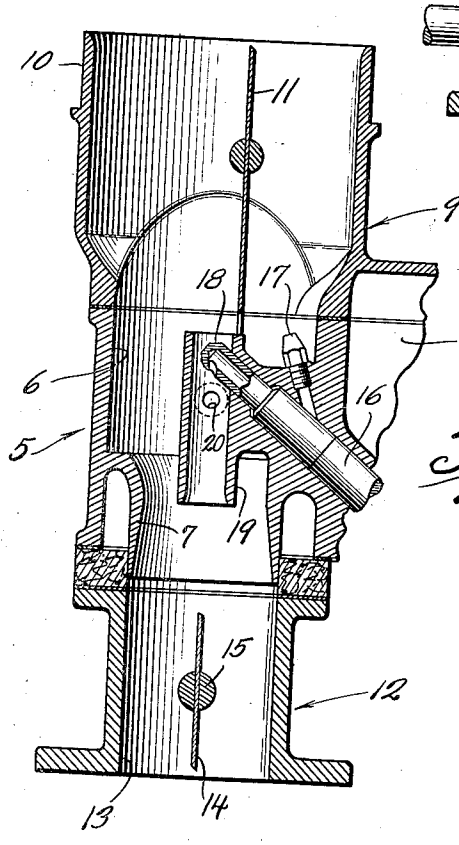


Fig. 2.

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CARBURETOR

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Application May 31, 1934, Serial No. 728,235

5 Claims. (Cl. 261—41)

The invention relates generally to a carburetor for internal combustion engines and more particularly to a duplex carburetor.

The general object of the invention is to provide a duplex carburetor of novel and improved construction resulting in a uniform discharge of combustible mixture from both barrels of the carburetor and a simultaneous commencement of discharge from the fuel nozzles.

More particularly the object of the invention is to provide a duplex carburetor having an equalizing passage connecting the two barrels of the carburetor at the point of discharge of the fuel to equalize the depression therein and thus assure that discharge from the nozzles will take place at the same time.

Other objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawing, in which

Figure 1 is a vertical sectional view showing both barrels of a duplex carburetor embodying the features of the invention.

Figure 2 is a vertical sectional view of the carburetor taken along line 2—2 of Fig. 1.

While the invention is shown in the drawing and will be described hereinafter as embodied in a carburetor of the down-draft, emulsion-tube type it functions equally well in other types of duplex carburetors and is, therefore, intended not to be limited by the disclosure but to cover all modifications and alternative constructions falling within the spirit and scope of the invention as defined by the appended claims.

In the drawing, 5 represents the main body member of the carburetor providing a common air inlet passage 6 extending partly through the member and terminating in two parallel, downwardly discharging Venturi members 7, and a fuel bowl 8 which houses a float controlled supply valve, accelerating means and fuel metering means (not shown). Bolted over the top of the body member 5 is a casting 9 providing a cover for the fuel bowl 8 and a choker tube 10 constituting an extension for the inlet passage 6. A choker valve 11 mounted in the tube 10 controls the inlet passage. Bolted to the bottom of the member 5 is a throttle body casting 12 providing two parallel discharge passages or barrels 13 registering with the Venturi members 7. Each of the passages 13 is controlled by a throttle valve 14 rigid with a common throttle valve shaft 15.

Fuel is discharged into the passage 6 from a pair of main supply nozzles 16 herein shown by way of example, as being of the air bleed type. Each of the nozzles 16 (more particularly described in the copending application of John R. Emerson, Ser. No. 727,035 filed May 23, 1934,) has an air vent jet 17 and terminates in a cap 18 discharging into one of two vertically disposed emulsion tubes 19. The tubes 19 are spaced laterally, each alined axially of one of the Venturi members and terminating therein. Thus each of the discharge barrels is supplied with fuel from one only of the nozzles 16; the nozzle operating in well known manner to discharge fuel when the flow of air through the emulsion tube is sufficient to create a suction of a degree to draw fuel from the nozzle.

Customarily each barrel of a duplex carburetor supplies combustible mixture to half of the cylinders composing the engine. If, thus, the nozzles start to discharge fuel at different times or after discharge has commenced the quantity discharged by one nozzle is different from that discharged by the other, the mixture supplied to the various cylinders of the engine will not be uniform and an irregular operation of the engine results.

Means is provided herein for preventing such non-uniform supply of combustible mixture by a duplex carburetor. This means comprises simply an equalizing passage providing communication between the duplex parts of the carburetor at points adjacent the main fuel supply nozzles. Herein this passage is provided by a horizontally disposed tube 20 communicating at its ends with the emulsion tubes 19 at a point just below the cap 18. The tube 20 thus maintains the same degree of depression in both emulsion tubes and thereby assures a simultaneous commencement of discharge from the nozzles and a uniform discharge after commencement.

The equalizing tube 20 also functions as a control for varying the degree of air flow at which the nozzles commence to discharge. This control is effected by varying the size of the equalizer passage; the discharge commencing earlier as the size of the equalizing passage is increased. It is believed this function is obtained because the equalizing passage intermittently feeds air from one emulsion tube to the other as the engine suction is applied to first one barrel and then the other. The emulsion tube thus is believed to have an ejector effect whereby the depression at the nozzle is increased.

I claim as my invention:

1. In a down-draft duplex carburetor, a main body member providing an inlet passage terminating in two parallel downwardly discharging

Venturi members, a choker tube casting secured to said main body member and providing an extension for said inlet passage, a choke valve controlling the inlet passage, a throttle body casting secured to said body member and having two discharge barrels registering with the Venturi members, a throttle valve in each of said barrels, a common shaft for said throttle valves, a pair of laterally spaced emulsion tubes, one discharging into each of said Venturi members, a main fuel nozzle for each of said tubes, and a horizontally disposed tube providing an equalizing passage between said emulsion tubes.

2. In a down-draft carburetor, a main body member providing an inlet passage terminating in two parallel downwardly discharging Venturi members, a choke valve controlling the inlet passage, a throttle body casting secured to said body member and having two discharge barrels registering with the Venturi members, a throttle valve in each of said barrels, a common shaft for said throttle valves, a pair of laterally spaced emulsion tubes, one discharging into each of said Venturi members, an air bleed main fuel nozzle for each of said tubes, and a horizontally disposed tube providing an equalizing passage between said emulsion tubes.

3. In a duplex carburetor, a main body member providing an inlet passage terminating in two parallel Venturi members, a choke valve controlling the inlet passage, a throttle body casting secured to said body member and having two discharge barrels registering with the Venturi members, a throttle valve in each of said barrels, a common shaft for said throttle valve, a pair of laterally spaced emulsion tubes, one terminating in and discharging into each of said Venturi members, a main fuel nozzle for each of said tubes, and a closed tube providing an equalizing passage between said emulsion tubes.

4. In a duplex carburetor, an inlet passage dividing into a plurality of carbureting passages, an emulsion tube for each of said passages disposed longitudinally thereof, a main fuel supply nozzle for each of said emulsion tubes discharging thereinto, and a tube extending between said emulsion tubes communicating therewith immediately adjacent the fuel nozzles to provide a passage for equalizing the depression in said emulsion tubes, said tube being closed except for its communication with the emulsion tubes.

5. The combination of a plurality of carbureting means each having a carbureting passage, a venturi in the passage, an emulsion tube disposed longitudinally of the passage and discharging into the venturi, a main fuel supply nozzle extending and discharging into said emulsion tube and a throttle valve controlling the flow of combustible mixture from the passage, said throttle being disposed posterior to said emulsion tube, a common shaft for the throttle valves of the carbureting means, and a duct communicating at its ends with the emulsion tubes adjacent the nozzles therein to equalize discharge therefrom and provide for simultaneous commencement of discharge, said duct being closed except for its communication with the emulsion tubes.

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