

1,279,100.

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

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CARBURETER.

1,279,100.

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To all whom it may concern:

Be it known that I, PIERRE P. GILLES, born in Switzerland of German parentage, now believing myself to be a citizen of the Swiss Confederation, and having formally declared my intentions of becoming a citizen of the United States of America in conformance with the United States immigration laws, and now residing at Springfield, in the county of Hampden and State of Massachusetts, United States of America, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to carbureters of that type which may be automatically supplied with fuel from a low level supply tank.

An object of the invention is to provide a carbureter of the class described wherein an air tight fuel receptacle is provided and a float in said receptacle arranged to control the inflow of fuel thereto from the low level supply tank, together with connections between the air intake pipe of the carbureter to the receptacle, both above and below the fuel level therein, the construction being characterized in that the receptacle is always exposed to suction, but the level of fuel therein is controlled by the float to prevent flooding of the carbureter.

Another object of the invention is to provide in a carbureter having an air intake pipe and an air tight fuel chamber, float controlled means in the chamber to control the inflow of fuel from the low level tank, a throttle valve in the intake, and connections from the intake to the chamber communicating with the latter above and below the level of fuel therein and communicating with the intake on the engine side of the throttle.

A further object is to provide in a carbureter of the type described, a valve in each connection from the intake to the fuel receptacle, and means whereby both valves may be simultaneously opened by movement of the throttle valve and proportionately with the latter, whereby the inflow of air and fuel, and the degree of vacuum in the fuel receptacle may be controlled by a single means.

Other objects and advantages will appear in the following description and will be pointed out in the appended claims.

The invention, in an embodiment at pres-

ent preferred, is disclosed for illustrative purposes in the accompanying drawings, in which—

Figure 1 is a sectional plan view of a carbureter embodying the invention;

Fig. 2 is a sectional elevational view taken on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary sectional elevational view taken on the line 3—3 of Fig. 1; and

Figs. 4 and 5 are end elevational and plan views, respectively, of a valve.

Referring to these drawings, the carbureter comprises a substantially horizontal intake pipe 8, which is open at both ends and adapted for attachment at the flanged end to the intake pipe of an engine, and a chamber 9, which is preferably integral with pipe 8 and is closed at the top by a suitable cover 10. It is to be understood that cover 10 is so applied that the chamber 9 is air tight. Within chamber 9 is a float 11 which is pivotally connected to one arm of a bell crank lever 12 pivoted at 13 to lugs depending from cover 10, and the other arm of lever 12 bears a valve 14, which is adapted to open and close an inlet port 15 by falling and rising of float 11, respectively. Port 15 is adapted for connection, as by pipe 16, to the main low level fuel supply tank. Preferably a hood 17 is provided to deflect the fuel, entering the chamber 9 from port 15, downwardly.

Referring to Fig. 1, adjacent the air inlet end of pipe 8 is a butterfly valve 18 operable in the usual manner for choking purposes. Adjacent the engine end of pipe 8 is a throttle valve 19, suitably secured to a sleeve 20, which is vertically and rotatably mounted in pipe 8, as best shown in Fig. 3. Fixed to the upper end of sleeve 20 is a lever 21 by means of which the throttle may be manipulated in the usual manner. A cam 22 is pivoted to throttle valve 19 to swing in a horizontal plane, and cam 22 has a part which extends into sleeve 20 through a suitable slot therein, as shown in Fig. 3. Threaded into sleeve 20 from the upper end thereof is a rod 23, which may be raised and lowered in the sleeve and has a wedge-shaped lower end to engage and move the cam 22 in a manner clearly obvious from Fig. 3. A spring 24 (Fig. 1) connects the free end of cam 22 and the valve 19 and holds the former against the wedge-shaped end of rod 23. The throttle valve 19 also carries another cam 25, which may be

formed integrally with the throttle, and cam 25 is arranged diametrically opposite from cam 22.

Referring to Fig. 1, a horizontal passage 26, formed in the wall of pipe 8, communicates at one end with the interior of the latter on the engine side of throttle valve 19. At its other end, passage 26 communicates with one end of a vertical passage 27, and the lower end of the latter is connected by a horizontal passage 28 to the interior of chamber 9 and at a point well below the normal level of fuel therein as will be seen from Fig. 2. The passage 26 is provided with a conical valve seat 29 (Fig. 1) and a valve member 30, slidable in passage 26, has a conical part to engage seat 29 and close the passage. The valve member 30 is best shown in Figs. 4 and 5 from which it will be seen that it has four flat surfaces 31 arranged at right angles to one another, whereby, when said conical part is moved axially away from seat 29, communication between pipe 8 and that part of passage 26 back of valve 30 may be had by means of the spaces between surfaces 31 and the peripheral wall of passage 26. The stem of valve 30 extends into pipe 8 and is held in engagement with the cam 22 by spring 32. Thus, valve 30 is arranged to open and close by the opening and closing of the throttle 19 and to open in proportion to the opening of the latter. The extent of opening of valve 30 may be varied by turning the threaded rod 23 and thereby varying the inclination of cam 22 relatively to throttle valve 19.

A horizontal passage 33 formed in pipe 8 and opposite from the described passage 26 communicates at one end with a passage 32' which leads into the pipe 8 on the engine side of throttle valve 19. A valve 34 is arranged to control communication between passages 32' and 33, and the stem of valve 34 extends into pipe 8 and is held against cam 25 by a spring 35 in passage 32'. It will be seen that valve 34 is also arranged to open and close by and in proportion to the opening and closing of the throttle valve 19. The passage 32' has communication by an upwardly extending vertical passage 36, a horizontal passage 37 and a depending vertical passage 38, with the chamber 9 above the level of fuel therein, all as shown in Fig. 2.

The operation of the carbureter will now be described. The chamber 9 may be originally filled in the following manner. The choke valve 18 is entirely closed and throttle valve 19 widely opened. Thus, a relatively high degree of suction is available to exhaust the air from chamber 9 both through the fuel connection (passages 26, 27, and 28) and the suction connection (passages 32', 33, 36, 37, and 38). The valve 14

being open, the exhaustion of chamber 9 causes fuel from the low level supply tank to flow therein until the chamber has been filled to a degree sufficient to close the valve by use of the float 11. The fuel connection becomes partly filled with fuel, but the valve 14 closes before the level of fuel rises sufficiently to flood the carbureter.

In normal operation, the valve 18 is positioned as illustrated, and valve 19 is manipulated in the usual manner. It will be seen that, as the throttle 19 is opened to permit a larger volume of air to pass through pipe 8 to the engine, so also is valve 30, so that the increase in volume of air is accompanied by a proportionate increase in fuel. Furthermore, the valve 34 is opened simultaneously with valve 30, whereby increased suction is available in the upper part of chamber 9 as well as the lower part thereof. Thus, as more fuel is withdrawn from chamber 9, a greater degree of suction is automatically available to draw more fuel from the low level supply tank. The desired result is to maintain the level in chamber 9 substantially constant by drawing fuel therein in quantities equal to those drawn out. In obtaining this result the simultaneously operated suction and fuel valves 34 and 30, respectively, play an important part, but to insure an even closer regulation of the fuel level in chamber 9 and to prevent overflow or flooding, I provide in combination with these valves, the float operated valve 14.

In my co-pending application Serial No. 184,736, filed August 6, 1917, I have dealt with the same problem, but the present invention provides a different solution for the problem and is characterized as an improvement on the invention disclosed in the above-named application.

The invention has been disclosed in an embodiment at present preferred for the purposes of illustration, but the scope of the invention is defined by the appended claims rather than by the foregoing description.

What I claim is—

1. A carbureter, comprising, an air intake passage adapted for connection to suction means, a throttle valve in said passage, an air tight chamber adapted for connection with a low level fuel supply tank, a float in said chamber, means operable from the float to control the inflow of fuel into said chamber and maintain the fuel level therein substantially constant, a connection from said intake passage to the chamber communicating with the latter above the level of fuel therein, and a second connection from said intake passage to the chamber communicating with the latter below the level of fuel therein, said connections communicating with the intake passage between said throttle

valve and that end of the intake passage adapted for connection to suction means.

2. A carbureter, comprising, an air intake passage adapted for connection to suction means, a throttle valve in said passage, an air tight chamber adapted for connection with a low level fuel supply tank, a float in said chamber, means operable from the float to control the inflow of fuel into said chamber and maintain the fuel level therein substantially constant, a connection from said intake passage to the chamber communicating with the latter above the level of fuel therein, a second connection from said intake passage to the chamber communicating with the latter below the level of fuel therein, and a valve automatically operable by opening and closing of the throttle valve to open and close the second connection and proportionately with the opening and closing of the intake passage.

3. A carbureter, comprising, an air intake passage adapted for connection to suction means, a throttle valve in said passage, an air tight chamber adapted for connection with a low level fuel supply tank, a float in said chamber, means operable from the float to control the inflow of fuel into said chamber and maintain the fuel level therein substantially constant, a connection from said intake passage to the chamber communicating with the latter above the level of fuel therein, a second connection from said intake passage to the chamber communicating with the latter below the level of fuel therein, and a valve automatically operable by opening and closing of the throttle valve to open and close the first connection and proportionately with the opening and closing of the intake passage.

4. A carbureter, comprising, an air intake passage adapted for connection to suction

means, a throttle valve in said passage, an air tight chamber adapted for connection with a low level fuel supply tank, a float in said chamber, means operable from the float to control the inflow of fuel into said chamber and maintain the fuel level therein substantially constant, a connection from said intake passage to the chamber communicating with the latter above the level of fuel therein, a second connection from said intake passage to the chamber communicating with the latter below the level of fuel therein, and a valve automatically operable by opening and closing of the throttle valve to open and close each connection and proportionately with the opening and closing of the intake passage.

5. A carbureter, comprising, an air intake passage adapted for connection to suction means, a throttle valve in said passage, an air tight chamber adapted for connection with a low level fuel supply tank, a float in said chamber, means operable from the float to control the inflow of fuel into said chamber and maintain the fuel level therein substantially constant, a connection from said intake passage to the chamber communicating with the latter above the level of fuel therein, a second connection from said intake passage to the chamber communicating with the latter below the level of fuel therein, and a valve automatically operable by opening and closing of the throttle valve to open and close the second connection and proportionately with the opening and closing of the intake passage, said connections communicating with the intake passage between said throttle valve and that end of the intake passage adapted for connection to suction means.

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