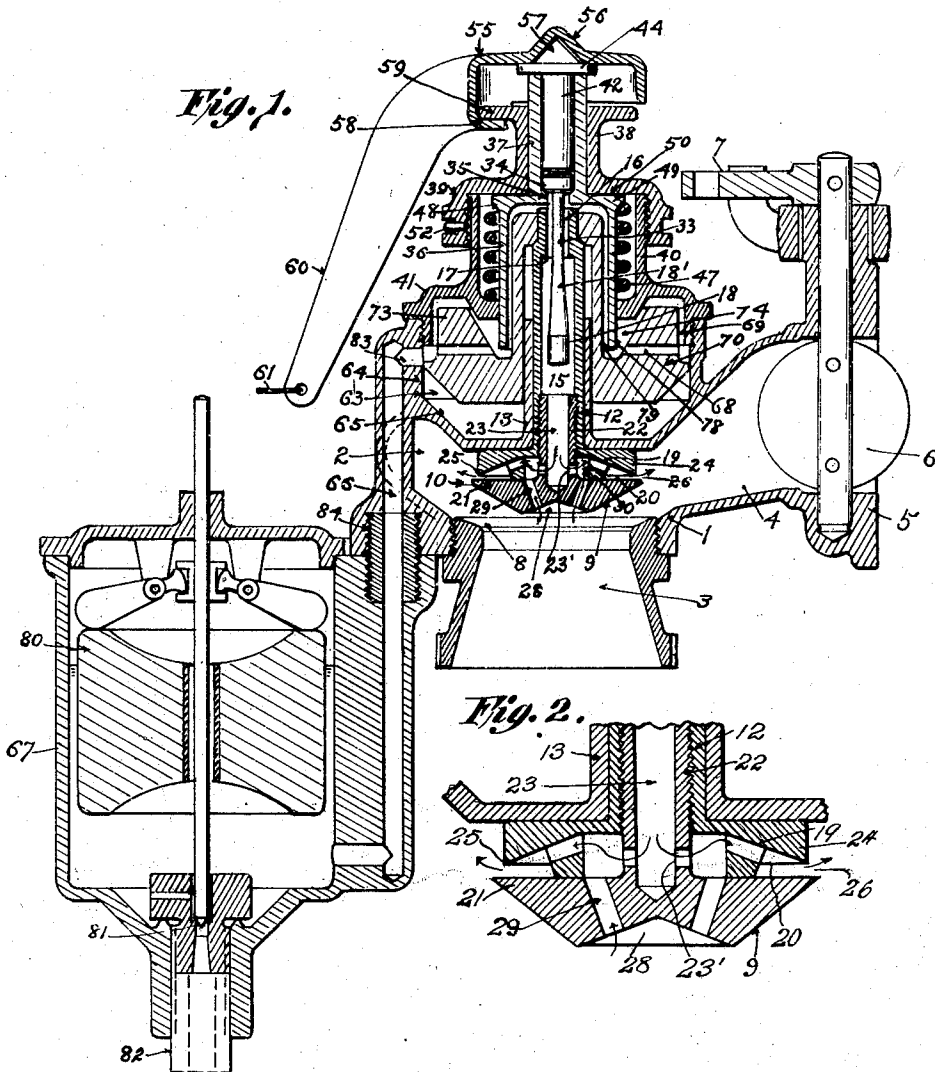


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CARBURETER.
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ALFRED C. STEWART, OF LOS ANGELES, CALIFORNIA.

CARBURETER.

1,389,016.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALFRED C. STEWART, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Carbureter, of which the following is a specification.

This invention relates to carbureters of the type having a lateral outlet for attachment to the intake or manifold pipe of the engine. In many cases this is the most convenient arrangement for the outlet, and it is also preferred in many cases to provide a fuel tank or chamber which is separate from the carbureter, so as to facilitate access thereto.

The main object of the present invention is to provide a carbureter construction having a lateral outlet and a separate fuel chamber and which will be of extreme simplicity, compactness and of minimum size and weight. The carbureter comprises in connection with the mixing chamber communicating with an air inlet and with the lateral outlet, an air valve operated by a suction of air through the carbureter and a fuel valve controlled by the movement of said air valve. In carrying out my invention, for the purpose of obtaining results above set forth, I utilize the part of the carbureter around portions of the aforesaid valve for the housing of a dashpot controlling the movement of the valves.

Another object of the invention is to provide improved means for atomizing and distributing fuel into the mixing chamber of the carbureter.

Another object of the invention is to provide convenient, simple and effective means for manual control of the fuel metering valve.

The accompanying drawings illustrate an embodiment of my invention, and referring thereto:

Figure 1 is a vertical section of the carbureter;

Fig. 2 is a detail section of the valve head on a larger scale.

The carbureter constituting my invention comprises a casing 1, formed with a mixing chamber 2, having an inlet 3 opening centrally into the bottom thereof and an outlet 4 opening at one side of the mixing chamber and provided with means 5 for attachment to the manifold or intake pipe of

the engine. A throttle 6 is preferably provided in the outlet 4 and is operated by usual means indicated at 7, to control the speed of the engine.

The air inlet 3 is formed as an inwardly flaring tubular member having a valve seat 8 at the upper end thereof, with which co-operates the lower face 9 of the air valve 10, said lower face 9 and the seat 8 being preferably formed with upwardly flaring faces to direct the incoming air between said faces and into the mixing chamber 2. The air valve 10 is mounted to slide vertically by means of its stem 12 sliding in a vertical tubular guide 13 projecting upwardly from the top of the mixing chamber 2. Said stem 12 is formed with an internal passage 15 extending axially therein and having an extension 16 of smaller diameter, which is open at its upper end for inflow of fuel as hereinafter described, the shoulder 17 between the passages 15 and 16 serving as a valve seat for cooperation with the fuel valve pin 18 hereinafter described. Said air valve is preferably formed with a lower head member 21 having a stem 22 screwing into the main valve stem 12 and provided with an axial passage 23 communicating at its upper end with the passage 15 aforesaid and having lateral openings 23' leading to passages 19 in the air valve, which open into an annular channel 20; said passages 19 and channel being formed in an enlargement 24 on the stem 12. The head member 21 has a flat upper face, which forms an oil distributing table and which extends below the channel 20 and is spaced sufficiently from a shoulder 25 at the periphery of the aforesaid valve part 24 to form a contracted fuel outlet 26, and said table portion of the valve head 21 preferably projects slightly beyond the periphery of the member 24 as shown. The valve head member 21 is formed with the inclined valve face 9 aforesaid and with a central cup or concavity 28 and with passages 29 leading upwardly from the said concavity to a channel 30 within the valve member 24, said channel communicating on the one hand with the openings 23' and on the other hand with the passages 19 leading to the channel 20.

The fuel valve comprises the valve pin aforesaid which has an upwardly tapering portion 18', for cooperation with the shoulder 17.

der 17, and a contracted stem 33 extending through the contracted passage 16 at the upper end of the air valve stem, said metering pin being provided at its upper end with a head 34 resting on annular shoulder 35 on a supporting member 36 whereby the valve pin is supported in position. Said supporting member 36 has a stem portion 37 slidably vertical in a tubular guide 38 formed on a screw cap 39 which screws on a boss 40, extending upwardly from the cap 41 of the carbureter casing. A pin 42 extends in an axial bore in the stem portion 36 and is provided with a flange 44 resting on top of said stem so as to support said pin in position with its lower end slightly above the head 34 of the valve pin so as to prevent any considerable upward movement of said pin with relation to its supporting member 36, while permitting slight tilting movement of said head, so as to enable the valve pin to centralize itself with respect to the contracted passage 16, which acts as a fuel passage. A helical spring 47 is mounted within the tubular boss 40 and engages at its lower end with the top of the cap 41 and at its upper end with an annular flange 48 on the supporting member 36 so as to hold said supporting member upwardly in position with a shoulder 49 on said member engaging a shoulder 50 on the cap 39. The cap 39 thus limits the upward motion of the fuel valve supporting member 35 and the normal position of the valve supporting member may be adjusted by screwing said cap member 39 up or down on the boss 40, the cap member being held in any adjusted position by spring catch 52.

To provide for priming or flushing the carbureter, manually operated means are preferably provided for depressing momentarily the fuel valve supporting member 36. A convenient means for this purpose, as shown on the drawing, may consist of a lever 55 formed with a recessed portion 56 fitting loosely on a cone 57 at the upper end of the pin 42, said lever having a shoulder 58 engaging under an annular flange 59 projecting from the cap 39 so that when the arm 60 of said lever is pulled laterally away from the axis of the carbureter, the part 58 will operate on the part 59 as a fulcrum and depress the cone 57 causing the flange 44 to engage the tubular stem 37 of the fuel valve support 36 and depress said valve support. The operating connection of the arm 60 may be made by means of a wire such as indicated at 61, which may extend in any suitable direction from the carbureter according to the requirements of convenience and to location of the carbureter with respect to the control on the dashboard of a motor vehicle and in any case the pull on the arm 60 by such controlling means will cause the arm to swing around on the cone

57 as a center so as to set itself in line with the pull, and a further pull on the arm will cause it to tilt and depress the fuel valve as above described. The lever is placed in position by pressing portion 56 thereof downwardly against cone 57 and at the same time tilting the arm 60 away from the carbureter casing so as to permit shoulder 58 to pass beneath flange 59, the arm 60 of the lever being then pushed inwardly so as to cause said shoulder to engage under said flange, as shown.

In order to provide for the necessary length of stem for the air valve the carbureter must extend to a considerable height above the mixing chamber and the part of the carbureter which surrounds the stem is, according to my invention, utilized for the dashpot cylinder. For this purpose, the carbureter casing is formed above the mixing chamber with a dashpot 63 having cylindrical side walls 64 and a dished bottom portion 65 which is surrounded by the mixing chamber. This dashpot cylinder is closed at the top by the screw cap 41 aforesaid and communicates at one side with a fuel duct 66 leading to the fuel supply chamber 67. Within the dashpot cylinder is provided a piston 70, mounted to slide within the vertical cylindrical wall 64 and guided on the tubular stem 13, and having a bottom portion corresponding in shape to the dished lower part of the dashpot cylinder and an upwardly extending rim portion 73 forming a recess 74 within said piston.

Portion 73 of piston 70 is provided with passages 68 leading from a space 69 around said portion to said recess 74.

The dashpot piston has a tubular upward extension 75 having a shoulder 76 resting on a shoulder 77 on the air valve stem 12, so that the weight of the piston is carried by the air valve and the motion of the air valve is controlled by the dash pot.

A tubular extension 78 of the valve support 36, extends down into the recess 74 in the piston, so as to extend to or below the level of the fuel in the dash pot and form passage 79 between members 78 and 75, and communicating with the fuel inlet passage 16 in the stem of the air valve.

Fuel chamber 67 may be of any suitable construction, being provided with float means indicated at 80 for maintaining a definite level therein, by control of an inlet valve 81 connected to a fuel supply pipe 82. The level of the fuel in said fuel chamber or float chamber 67 is preferably below the level of the inlet at 83 to the carbureter, so that the fuel has to be drawn up to the carbureter by the suction in the latter. The said fuel chamber or float chamber is preferably connected to the carbureter by a joint 84 permitting removal of the said chamber if desired.

In the operation of the carbureter, the suction, or deficiency of pressure in the mixing chamber below atmospheric pressure, causes the air valve to be lifted from its seat 8, and air to be drawn between said parts and past the fuel outlet 26 in the air valve; at the same time air is drawn from the inlet directly through the passages 29 and is drawn along with the liquid fuel through passages 30 and 19, thereby causing a mixture of air and liquid fuel to issue in a radial sheet from the periphery of the air valve, thoroughly atomizing the liquid fuel and insuring its vaporization. The liquid fuel is drawn from the float chamber and fills the dash pot sufficiently to cause it to enter the annular passage 79 aforesaid, and to be siphoned up over the dash pot piston stem and down in the passages in the air valve stem, around the controlling pin 18, so as to mix the air entering the air valve as above described.

In case flushing is desired, it is only necessary to depress the fuel valve support 36, by operation of lever 60, as above set forth, this operation lowering the controlling pin so that a narrower part thereof is opposite the shoulder 17 and more fuel is permitted to enter.

What I claim is:

1. A carbureter comprising a mixing chamber, having an air inlet at its bottom and a lateral outlet, said air inlet having a valve seat, an air valve cooperating with said valve seat and being adapted to be opened by pressure of the air at the air inlet, said air valve having an upwardly extending stem, guide means extending upwardly from the mixing chamber for guiding the said valve stem, a dash pot cylinder surrounding said guide means for the valve stem and provided with means for supplying liquid fuel thereto, a dash pot piston working in said dash pot cylinder and mounted on the valve stem to control the motion of the valve, and fuel supply means controlled by the operation of the air valve to supply fuel to the mixing chamber.

2. A carbureter comprising a mixing chamber having an air inlet at its bottom

and a lateral outlet, said air inlet having a valve seat, an air valve cooperating with said valve seat and adapted to be opened by pressure of the air on its lower face and having an upwardly extending stem, a tubular guide member mounted on the mixing chamber for guiding said stem, a dash pot cylinder surrounding said stem and tubular guide member, means for supplying liquid fuel to said dash pot cylinder, a dash pot piston working in said dash pot cylinder and mounted on the air valve stem to control the motion thereof, and fuel supply means including fuel valve means controlled by the operation of the air valve, for supplying fuel from said dash pot cylinder above the piston therein to said mixing chamber.

3. A carbureter comprising a mixing chamber having an inlet valve seat in its bottom and a lateral outlet, an air valve cooperating with said valve seat and adapted to be opened by pressure of the air on its lower face and provided with fuel passage means opening into the mixing chamber peripherally of the valve, guide means extending upwardly from the mixing chamber, a stem for the air valve mounted to slide vertically in said guide means, said stem being provided with fuel passage means communicating with the fuel passage means in the said valve, a dash pot cylinder surrounding the said stem and guide means, means for supplying liquid fuel to said dash pot cylinder, tubular means surrounding said valve stem and extending down into the liquid fuel in the dash pot cylinder so as to conduct fuel from the dash pot cylinder to the passages in the air valve stem, a dash pot piston connected to said air valve and working in said dash pot cylinder and a fuel valve mounted in the carbureter and having a taper portion extending within the said passage in the air valve stem, said stem being provided with a shoulder for cooperating with said taper portion to control the fuel supply.

In testimony whereof I have hereunto subscribed my name this 29th day of July, 1918.

ALFRED C. STEWART.