Feb. 27, 1934. W. H. WEBER 1,949,031

CARBURETOR

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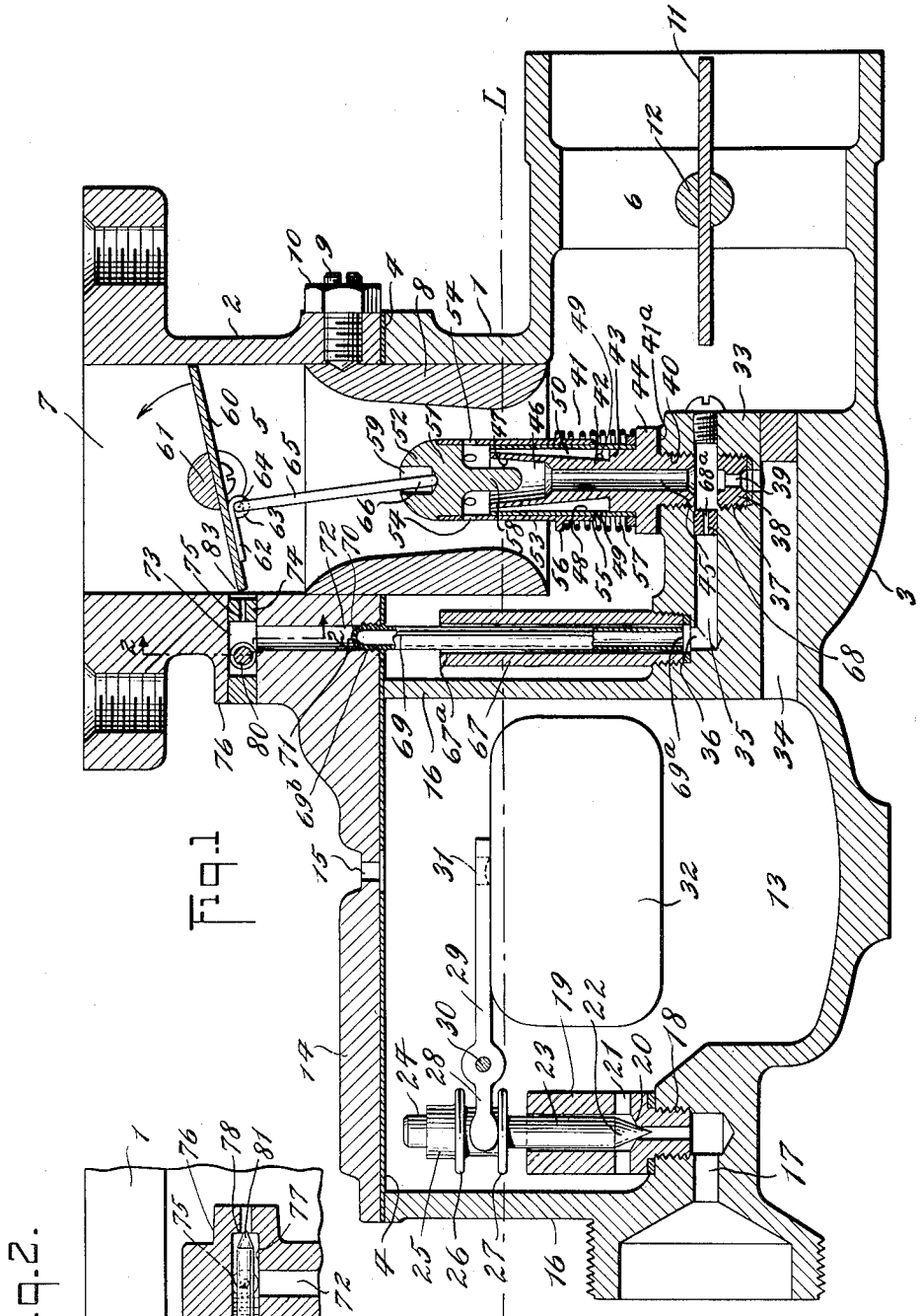


Fig. 1

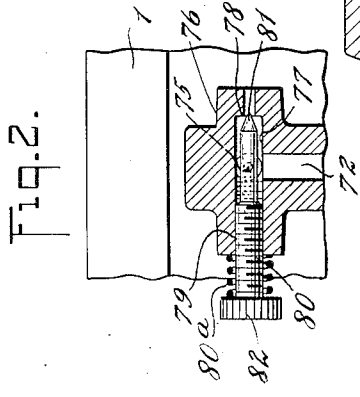


Fig. 2.

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CARBURETOR

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18 Claims. (Cl. 261—34)

My invention relates to new and useful improvements in carburetors, and more particularly to a carburetor of the plain tube type.

An object of my invention is to provide a carburetor of simple construction and which is efficient in operation.

Another object is to provide a carburetor by which maximum power, economy, and flexibility of operation may be obtained.

The invention consists in the improved construction and combination of parts, to be more fully described hereinafter, and the novelty of which will be particularly pointed out and distinctly claimed.

In the accompanying drawing I have fully and clearly illustrated a preferred embodiment of my invention, to be taken as a part of this specification, and wherein—

Figure 1 is a vertical central sectional view of my improved carburetor, and

Fig. 2 is a detail sectional view on the line 2—2 of Fig. 1.

Referring to the drawing by characters of reference, 1 designates a carburetor casing comprising an upper section 2 and a lower section 3 having a gasket 4 therebetween. The casing 1 has a mixing chamber 5 with an air inlet 6 and a mixture outlet 7. Within the casing 1 is a sleeve 8, preferably of Venturi form, which embodies the inner end of the air inlet 6 and the lower portion of the mixing chamber 5. The sleeve 8 may be held in place in the casing 1 by any well known means such as welding, shrinking, or casting the same integral with part 2; but I prefer to employ a screw 9 threaded through the upper part 2 and fixed by a lock nut 10. The air inlet 6 is preferably provided with an air control or choke valve 11, supported on a rotatable shaft 12 having an operating lever (not shown), and suitable operating means extending to a position for easy access by the operator, as for example, to the dash-board of the vehicle.

Carried by, and preferably integral with the lower section 3, is a fuel reservoir 13, having a cover 14 which may, if desired, be integral with section 2. Through the cover 14 is an air inlet 15 whereby atmospheric pressure is maintained upon the fuel within the reservoir. The side wall 16 of the reservoir is provided with a fuel inlet 17 which may be connected to any source of supply, such as a fuel tank (not shown). At its inner end 18 the inlet 17 is threaded to receive a tubular guide 19 having a valve seat 20 and fuel apertures 21. Within the guide 19 is a valve 22, preferably of the needle type, which is adapted to engage the seat 20. The valve 22 has a stem 23 which is slidably mounted in the valve guide 19, and the free end 24 of which projects beyond the guide and has fixed thereon a collar 25 with spaced circumferential flanges or shoulders 26, 27. Engaging the collar 25 between the shoulders 26, 27, is one end 28 of a lever 29. The end 28 is preferably bifurcated to form a yoke so as to engage the flanges 26, 27 at diametrically opposite points. Within the reservoir 13 is a fixed horizontal pin 30 which serves as a pivot to support the lever 29. At the free end 31 of lever 29, and carried rigidly thereby, is a float 32, preferably of sheet-metal, which operates through lever 29 to open and close valve 22 to maintain a substantially constant fuel level in the reservoir 13.

Within the air inlet 6 is a boss 33 which extends from the wall 16 of the reservoir to a point beyond the longitudinal center line of sleeve 8. The boss 33 has two substantially parallel horizontal passageways or conduits 34, 35, each of which extends through the longitudinal center line of sleeve 8. One of the passageways 34 opens into the reservoir 13 and the other passageway 35 opens upward, as at 36, adjacent the wall 16 into the air inlet 6. Between the passageways 34 and 35 is a communicating passage 37 which is preferably internally threaded to receive a plug 38 having a calibrated orifice 39 which is the main fuel jet. Within passageway 35 is a tightly fitting plug 68 which is adjacent the passage 37, and which has a calibrated orifice 68^a for a purpose to be described. Above the passage 37 is an internally threaded opening 40 between passageway 35 and air inlet 6. The passage 37 and opening 40 are preferably in the longitudinal center line of sleeve 8. Threaded into the opening 40 is a fuel nozzle 41 which projects upward into the sleeve or throat 8.

The nozzle 41 has a supporting member 42 with a circumferential cylindrical shoulder 43, from which projects a circumferential flange 44. Between the lower face of the flange 44 and the boss 33, is a gasket 41^a to seal the member 42 in opening 40. Through the member 42 is a longitudinal bore 45 which opens at its upper end into a reservoir or fuel cup 46, which is open at its top. The side wall 47 of cup 46 preferably has a slight upward divergence so that the cup forms in effect a truncated hollow cone. The maximum outside diameter of the cup 46 at its top is, however, of less diameter than the shoulder 43. Laterally surrounding the member 42 and supported on the flange 44, is a hollow tube 48,

which is sealed to the circumferential face of shoulder 43 and extends upward adjacent to but spaced from the wall 47 at the top of cup 46. In the tube 48 adjacent its lower end, but above shoulder 43, are one or more calibrated apertures 49, preferably three in number and spaced 120° apart, which permit communication between the air inlet 6 and the passage 50 between member 42 and tube 48. Overlying the member 42 is a cap or jacket 51 having a top 52 and a depending tubular skirt 53 forming the side wall of the cap 51, thereby providing a chamber or space over the cup 46 and the discharge end of the air passage 50. The tubular skirt 53 has a free sliding fit with the outside of the tube 48, and has one or more calibrated fuel outlet apertures 54 therethrough, preferably six in number, spaced 60° apart and adjacent the top 52 above the level of cup 46 and leading from the chamber or space over cup 46 into the mixing chamber 5. The side wall or depending skirt 53 is of sufficient length so that it may be slid downward on the tube 48 until the lower end 55 thereof, which serves as valve means, covers and closes the apertures 49 while maintaining communication through the apertures 54 above the top edge of cup 46. On the skirt 53 near its lower end 55, is a circumferential flange 56. Between the flanges 44 and 56 is a spring 57, preferably of the coil type, which tends to expand to hold the skirt 53 raised to maintain the ports or apertures 49 uncovered. Fixed to and depending from the top 52 of cap 51, is a plunger or piston 58 which normally projects a short distance into and is of smaller diameter than the fuel cup or reservoir 46.

Between the mixing chamber 5 and the outlet 7, is a control or throttle valve 60, preferably of the butterfly or plate type, which is fixed on a rotatable shaft 61 journalled in the wall of the upper section 2 of the casing 1. A lever (not shown), or any other suitable and well-known means, may be fixed to the shaft 61 outside of the casing 1 for operation of the throttle 60. Carried by the throttle 60 on the underside thereof, is a support 62 having a bearing eyelet 63 in which is journalled the lateral extension 64 of a push rod 65. The free lower end 66 of rod 65 extends downward into a socket 59 in the top 52 of cap 51. This rod 65 is of such length that when the throttle is in closed position, Fig. 1, the spring 57 will maintain the skirt 53 raised to uncover the apertures 49, and when the throttle is opened the skirt 53 will be depressed to cover apertures 49.

Threaded or otherwise fixed in the upward facing opening 56 of passageways 35 is an open ended hollow tube 67 which serves as a fuel well. Within this tube 67 and in spaced relation to the internal side walls thereof to form an annular air passage 67ª, is a tubular conduit 69 which extends downward substantially to the bottom of the well 67 and has an open unrestricted lower end 69ª. The upper end of the tube or conduit 69 is externally threaded, as at 69ᵇ for threaded supporting engagement with the inside wall at the lower end of vertical bore 72 in the upper section 2. Through the top of the tube 69 which is capped, as at 70, is a calibrated orifice 71 opening into bore 72.

At its upper end the bore 72 opens into a transverse passage or inlet 73 to the mixing chamber 5, the inlet being substantially at the level of the throttle 60 when in closed position. A plug 74 having a calibrated orifice 75 is inserted tightly in inlet 73 between the bore 72 and the mixing chamber 5. Transverse of inlet 73 and bore 72 is a boss 76 on the outside of upper part 2 of the casing 1, which has an air passage 77 therethrough which is longitudinal of the boss and which opens laterally into the inlet 73. At one end of passage 77 is an internal shoulder 78 which serves as a valve seat, and at the opposite end 79 the passage 77 is internally threaded to receive a valve stem 80 reciprocable in air passage 77 and having a valve 81 which cooperates with seat 78. The end of stem 80 which projects through boss 76 has an operating head 82, preferably knurled. Surrounding the stem and between the head 82 and boss 76 is a coil spring 80ª under compression to hold the valve 81 in adjusted position.

Operation of my improved carburetor is as follows: The carburetor having been attached at the outlet 7 to an engine intake manifold, and the fuel inlet 17 having been attached to fuel supply means, the reservoir 13 will fill with liquid fuel to substantially the line L—L, when the float 32 will close the valve 22. As indicated by line L—L, there will then be liquid fuel in the well 67 and also in the cup 46 in which piston 58 is partially immersed. When the engine is started the throttle 60 will be opened, which, acting through rod 65, will depress the sleeve or skirt 53 to close the apertures 49; the choke valve 11 will also be closed manually by the operator, so that the sub-atmospheric pressure created by the suction of the engine will act directly upon the fuel in the cup 46 and substantially no air will be drawn into the engine, giving a rich starting mixture. As the engine starts running, the choke 11 is opened and the throttle 60 may be closed, as shown in Fig. 1, if it is desired to run the engine idle. This is possible by reason of the fuel supply furnished from the well 67 to the mixing chamber 5 through orifice or idling jet 75. There will be substantially atmospheric pressure on the surface of the fuel in the well 67, due to the annular passage 67ª, and since valve 81 has been so adjusted that the air admitted through passage 77 and orifice 75 to the mixing chamber 5 will be insufficient to satisfy the demand created by the aspirating air stream passing the orifice 75 at the edge 83 of the throttle 60, liquid fuel will be aspirated from well 67 and will mix with the air entering through passage 77 and with the aspirating air passing throttle edge 83 to form a combustible charge for the engine at idling speeds. It is evident that the proportions of air and fuel may be regulated by the air valve 81. If the valve 81 were opened sufficiently wide the pressure in conduit 69 during running of the engine would be atmospheric and air alone would be drawn through orifice 75. However, if the valve 81 were closed so that no air was admitted through passage 77, then the pressure on the fuel in conduit 69 would be substantially the sub-atmospheric pressure existing in the outlet 7, and fuel alone would be sucked into the aspirating air stream. Any variation between these extremes is possible by adjustment of valve 81 with respect to its seat 78.

With the parts at rest and the engine not running, the fuel level in the various passages of the carburetor and in the reservoir is at the level line L—L. When the throttle is closed and the engine is idling, no fuel will be drawn from the nozzle 41 by the air flowing through the venturi 8 and passing the throttle edge 83, because the degree of sub-atmospheric pressure in the venturi

and above the level of liquid in the cup 46 is too slight to lift the fuel level in the cup to a level where it will be discharged. Under these conditions there is a very slight movement of air through ports 49, passage 50 and holes 54, which has the tendency and may slightly raise the level of the liquid fuel in the cup 46, but not high enough to overflow the upper edge of the wall 47—that is, to a point where it could be picked up by the air flow. As the throttle 60 is first opened from the position shown in Fig. 1, skirts 55 descends slightly, but holes 49 remain substantially open during the period of usual normal driving of the car—say, for speeds approximating 25 miles per hour and under. When the throttle is slightly opened, as stated, and the speed of the engine increases, the engine demand for mixture also increases and the air velocity through the venturi 8 is increased to a point where the fuel level in the cup 46 will be raised to the point where it will overflow the upper edge of the cup, under which conditions fuel will be aspirated by air passing through shunt passage 50 in the nozzle. I wish to point out that although the mixture supplied by the idling by-pass 72 is sufficient in quantity to carry the car speed up to about 10 miles per hour, still the slightest movement of air through the nozzle passage 50 will raise the level of the fuel therein because of aspiration. In actual practice I find that a mixture of air and fuel begins to discharge from the main nozzle at some point between 5 and 10 miles per hour car speed. Since it is easier to lift air than a liquid, the first mixture supplied by the main nozzle, i. e., at low speeds, will be very "lean" even to the extent that it is too poor to fire in the cylinders, but it is supplemented by fuel from the idling jet 75 to furnish a combusible mixture. Then as the throttle edge 83 moves further away from the orifice 75 to increase the car speed—say, above 10 miles per hour—the discharge of liquid from the idling by-pass becomes less and less, but the mixture from the main nozzle increases in richness to make up the deficiency. The resultant mixture over this range—that is, up to 20 miles per hour—is obtained from the combined discharge from the idling by-pass and the main nozzle and is of the proper proportions to be combustible in the engine cylinders.

In the case of known carburetors of the simple plain tube type having no air shunt passage, fuel will commence to be discharged from the main nozzle at some car speed between 5 and 10 miles per hour. This fuel added to that discharged by the usual idling by-pass, together with the air drawn through the venturi, produces a combustible mixture which is richer than is required for average driving or maximum thermal efficiency at such speeds. In other words, there is such an excess of fuel throughout the part throttle operating range, even after the idling by-pass has ceased functioning, that an additional quantity of air could be added at some point beyond the throttle without injuring the carburetion, and would result in a mixture of maximum thermal efficiency. The excess liquid fuel so delivered to the engine by the simple plain tube carburetor is thus wasted. Attempting to save this waste of liquid fuel at low speeds by cutting down the main nozzle discharge by reducing the size of the main jet 39, would result in the mixture being too "lean" for maximum power when the engine is running under wide open throttle. The advantage of my construction over the simple plain tube carburetor with an idling by-pass, resides in the provision of my variable shunt composed of the holes 49, passage 50 and holes 54, by which I avoid this waste of fuel without interfering with the quality or quantity of mixture desirable for maximum power or wide open throttle demands. The movement of the shunt sleeve is so timed by means of the rod 65, that the shunt only remains open through holes 49, passage 50 and holes 54 for normal driving—that is, the flow of fuel through the main nozzle is regulated during those speed ranges when maximum economy is desired and when the discharge from the known simple plain tube is wasteful—that is, more than required. Starting from rest, the feed is first from the idling passage alone, and then is cut down on the idling passage and increased from the main nozzle. These two feeds cooperate or balance proportionately to maintain an economical supply of liquid fuel to give a proper mixture for maximum thermal efficiency. As the throttle 60 is opened to obtain car speeds above 20 miles per hour, the idling supply of fuel through orifice 75 will automatically cease, due to a drop in the level of fuel in the well 67, since this well forms the atmospheric leg of a U-tube of which the nozzle 41 is the suction leg. Upon further opening of the throttle 60, the operation of the nozzle 41 will be affected, since the suction acting within the shunt and above cup 46 will empty the atmospheric leg of the U-tube of liquid fuel, and the cup 46 will then discharge an emulsion of fuel comprising liquid fuel from calibrated orifice 39 and emulsifying air from the calibrated orifice 68 admitted through the empty well 67. Additional air entering the ports 49 and passing up through the shunt will be bled into this emulsion of fuel before its discharge from ports 54 into the aspirating air stream. The shunt continues to function up to 40 or 50 miles per hour, but to a lesser extent, until the throttle is wide open, when the shunt passage 50 is closed by the skirt 55 covering the inlet ports 49, under which conditions the fixed air bleed 68 supplies all of the emulsifying air through passage 35 to the main nozzle required for maximum power. As the throttle is closed the reverse action of the shunt 50 will occur, the spring 57 raising the skirt 53 to maintain cap 51 in contact with rod 65.

The function of the piston or plunger 58 remains to be described. It is desirable that there be some means to momentarily enrich the mixture upon sudden opening of the throttle for quick acceleration. When the throttle is opened quickly, the plunger is forced into the cup 46 and necessarily displaces liquid fuel therefrom, additional to that normally aspirated, which overflows the cup 46 and is carried off by the aspirating air stream passing ports 54.

I have found, under test, that my improved carburetor having orifices with the following specified diameters of bore will function as above described:

Orifice	Diameter of bore in inches
Nozzle discharge 75	.040
Fuel jet 70	.028
Air bleed 68	.037
Each nozzle discharge 54	.047
Each air bleed 49	.028
Nozzle discharge 45	.094
Fuel jet 39	.043

However, it is to be noted that orifices having

bores of other diameters may be employed. In order to obtain maximum power the compensation must not exceed 25%; but for maximum economy the compensation may be 50%, or even higher. By the term "compensation" I mean the ratio, stated in percentage, between the total area of air bleed and the total area of nozzle discharge. It will be seen that with the above specified diameters of bore, that for normal driving—i. e., when the orifice 68 and the three orifices 49 are bleeding air into the nozzle, the compensation will be equal to—

$$\frac{3\ (\text{area of bleed } 49)+\text{area of bleed } 68}{6\ (\text{area of discharge orifice } 54)}=\frac{3\ (.014)^2+(.0185)^2}{6\ (.0235)^2}=\frac{.000930}{.003302}=28\%$$

Although the orifices 49 are above given as .028 inches in diameter, and the orifice 68 as .037 inches in diameter, these diameters may each be increased to .047 inches, which would then give for normal driving—

$$\text{compensation}=\frac{3\ (.0235)^2+(.0235)^2}{6\ (.0235)^2}=66\%$$

Again taking the above specified diameters of bore, it is apparent that for wide open throttle, i. e., when the orifice 68 alone bleeds air into the nozzle 45, and therefore the area of the nozzle 45 is the total area of nozzle discharge, the compensation will be equal to—

$$\frac{\text{area of bleed } 68}{\text{area of nozzle } 45}=\frac{(.0185)^2}{(.047)^2}=15\%$$

With the diameter of bleed 68 increased to .047 inches, the compensation for wide open throttle would be—

$$\frac{(.0235)^2}{(.047)^2}=\frac{.0005522}{.002209}=25\%$$

From the foregoing it will be apparent that by the use of my improved carburetor the richness of the combustible mixture fed to the engine is controlled in a simple and efficient manner to give maximum economy for normal driving, and maximum power for wide open throttle while retaining flexibility of operation.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A carburetor comprising a mixing chamber having air and fuel inlets and a mixture outlet, a fuel reservoir for supplying fuel to said fuel inlet, means to control flow through said chamber, a variable air jet cooperable with and controlling said fuel inlet, said air jet discharging into said fuel inlet and said chamber above the normal fuel level in said reservoir whereby the air issuing from said air jet acts by aspiration upon the fuel in said fuel inlet, and means operable by said control means to regulate said air jet.

2. In a carburetor, a casing having a mixing chamber, air and fuel inlets to said mixing chamber, an outlet from said mixing chamber, a throttle to control said mixture outlet, a jacket surrounding said fuel inlet and having an aperture above said fuel inlet, means to shunt air through said jacket, and means controlled by said throttle for regulating said last-named means.

3. In a carburetor, a casing, a mixing chamber in said casing having an air inlet, a fuel nozzle in said air inlet, a mixture outlet from said mixing chamber, a throttle in said mixture outlet, a cap overlying said fuel nozzle and spaced therefrom to provide an air passage and a chamber over said nozzle outlet and into which said air passage delivers air, said cap having a discharge port above said fuel nozzle, and means controlled by said throttle to control the flow of air through said air passage and cap.

4. In a carburetor, a casing having a mixing chamber, an air inlet to said mixing chamber, a fuel nozzle in said air inlet, a mixture outlet from said mixing chamber, a throttle in said mixture outlet, a cap overlying said fuel nozzle and forming a chamber above the nozzle, and having a skirt laterally spaced from said fuel nozzle to provide an air passage delivering air into said chamber, said skirt having an aperture communicating with the mixing chamber above said fuel nozzle, and valve means to control the passage of air through said air passage.

5. In a carburetor, a casing having a mixing chamber, an air inlet to said mixing chamber, a fuel nozzle projecting into said air inlet, a tube surrounding said fuel nozzle and spaced laterally therefrom to form an air passage, a cap overlying the discharge opening of said fuel nozzle and having a tubular skirt slidably engaging said tube, said tubular skirt having an aperture above the discharge opening of said fuel nozzle, and said tube having an air inlet aperture to said air passage and adapted to be covered and uncovered by sliding movement of said tubular skirt.

6. In a carburetor, a casing having a mixing chamber, an air inlet to said mixing chamber, a fuel nozzle projecting into said air inlet, a tube surrounding said fuel nozzle and spaced laterally therefrom to form an air passage, a cap overlying said fuel nozzle and forming a chamber into which said fuel nozzle and said air passage discharge fuel and air respectively, said cap having a tubular skirt slidably engaging said tube, said tubular skirt having a discharge aperture from said chamber above said fuel nozzle, said tube having an air inlet aperture adapted to be covered and uncovered by said tubular skirt, and means tending to maintain said air inlet aperture uncovered.

7. In a carburetor, a casing having a mixing chamber, an air inlet to said mixing chamber, an outlet from said mixing chamber having a throttle, a fuel nozzle projecting into said air inlet, a tube surrounding said fuel nozzle and spaced laterally therefrom to form an air passage, a cap overlying said fuel nozzle and forming a chamber into which said fuel nozzle and said air passage discharge fuel and air respectively, said cap having a tubular skirt slidably engaging said tube, said tubular skirt having a discharge aperture above said fuel nozzle, said tube having an air inlet aperture adapted to be covered and uncovered by sliding movement of said tubular skirt, and means carried by said throttle to move said tubular skirt.

8. In a carburetor, a casing having a mixing chamber, an air inlet to said mixing chamber, a fuel nozzle projecting into said air inlet, a tube surrounding said fuel nozzle and spaced laterally therefrom, a cap overlying said fuel nozzle and having a tubular skirt slidably engaging said tube, said tube having an aperture adapted to be covered and uncovered by said tubular skirt, said tubular skirt having an aperture above said fuel nozzle, and a plunger depending from said cap and cooperable with said fuel nozzle to force fuel therefrom.

9. In a carburetor, a casing having a mixing chamber, an outlet from said mixing chamber

having a throttle, an air inlet to said mixing chamber, a fuel nozzle projecting into said air inlet, a tube surrounding said fuel nozzle and spaced laterally therefrom, a cap overlying said fuel nozzle and having a tubular skirt slidably engaging said tube, said tube having an aperture adapted to be covered and uncovered by said tubular skirt, said tubular skirt having an aperture above said fuel nozzle, a plunger depending from said cap and cooperable with said fuel nozzle to force fuel therefrom, when the skirt closes the aperture in said tube, a spring engaging said skirt and tending to maintain the aperture in said tube uncovered, and means carried by said throttle and operative to move said tubular skirt to cover the aperture in said tube.

10. In a carburetor, a casing having an air inlet, a throttle controlling flow through said casing, a fuel nozzle in said air inlet, a cap overlying said fuel nozzle and spaced therefrom to provide an air passage, said cap having a discharge means to shunt air through said nozzle into said space between said cap and fuel nozzle, and means controlled by said throttle for regulating said last-named means.

11. In a carburetor, a casing having a mixing chamber, an air inlet to said mixing chamber, an outlet from said chamber having a throttle, a fuel nozzle in said air inlet, said fuel nozzle terminating at its upper end in a fuel retaining cup having an open top, a cap enclosing said open top and slidable on said nozzle and having a fuel discharge aperture therein, means to force fuel from the open top of said cup, and means carried by said throttle to operate said fuel-forcing means.

12. In a carburetor, a casing having a mixing chamber, an air inlet to said mixing chamber, a main fuel nozzle in said air inlet, a Venturi tube comprising the lower end of said mixing chamber, means to shunt air through said nozzle to control the fuel discharge therefrom, said nozzle having a reservoir, and means to decrease the capacity of said reservoir thereby to force fuel from said reservoir through said nozzle to said tube.

13. A carburetor comprising a mixing chamber having an air inlet, a plurality of fuel inlets and a mixture outlet, a throttle valve in said outlet, one of said fuel inlets having means to feed air thereto, means to control said air feeding means, means operable upon predetermined opening movement of said throttle to bleed air to said one fuel inlet whereby said one fuel inlet discharges an emulsion of air and fuel to said mixing chamber, and means operable by said throttle to augment the fuel supplied to said mixing chamber by said one fuel inlet.

14. A carburetor comprising a mixing chamber having an air inlet, a plurality of fuel inlets and a mixture outlet, a throttle valve in said outlet, one of said fuel inlets having means to feed air thereto, throttle operated means to control said air feeding means, means operable upon predetermined opening movement of said throttle to bleed air to said one fuel inlet whereby said one fuel inlet discharges an emulsion of air and fuel to said mixing chamber, and means operable to augment the fuel supplied to said mixing chamber by said one fuel inlet.

15. A carburetor comprising a mixing chamber having an air inlet, a plurality of fuel inlets and a mixture outlet, a throttle valve in said outlet, one of said fuel inlets having means to feed air thereto, means to control said air feeding means, means operable upon predetermined opening movement of said throttle to bleed air to said one fuel inlet whereby said one fuel inlet discharges an emulsion of air and fuel to said mixing chamber, and pump means operable by said throttle to augment the fuel supplied to said mixing chamber by said one fuel inlet.

16. A carburetor comprising a mixing chamber having an air inlet, a plurality of fuel inlets and a mixture outlet, a throttle valve in said outlet, one of said fuel inlets having means to feed air thereto, means to control said air feeding means, an air bleed port adapted to discharge into said one fuel inlet and being normally sealed, said air bleed port serving upon predetermined opening movement of said throttle to bleed air to said one fuel inlet whereby said one fuel inlet discharges an emulsion of air and fuel to said mixing chamber, and pump means operable in response to throttle movement to augment the fuel supplied to said mixing chamber by said one fuel inlet.

17. A carburetor comprising a mixing chamber having air and fuel inlets and a mixture outlet, a throttle valve controlling said mixture outlet, a variable air jet normally acting to supply air to said fuel inlet for discharge into said mixing chamber, said fuel inlet having a fuel reservoir, a piston operable to discharge fuel from said reservoir into said chamber, and means operable by said throttle valve for varying said air jet and for actuating said piston.

18. A carburetor comprising a mixing chamber having air and fuel inlets and a mixture outlet, a throttle valve controlling said mixture outlet, means to feed air into said fuel inlet from said air inlet for controlling the fuel discharge from said fuel inlet, means to regulate said air feeding means, said fuel inlet having a fuel reservoir, a piston operable to discharge fuel from said reservoir into said chamber, and means operable by said throttle valve for actuating said regulating means and said piston.

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