

May 22, 1934.

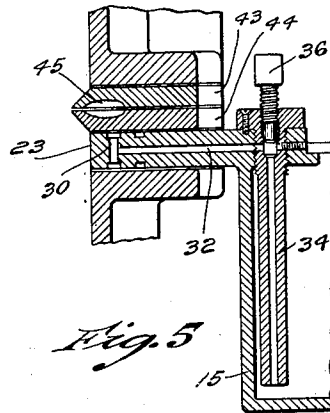
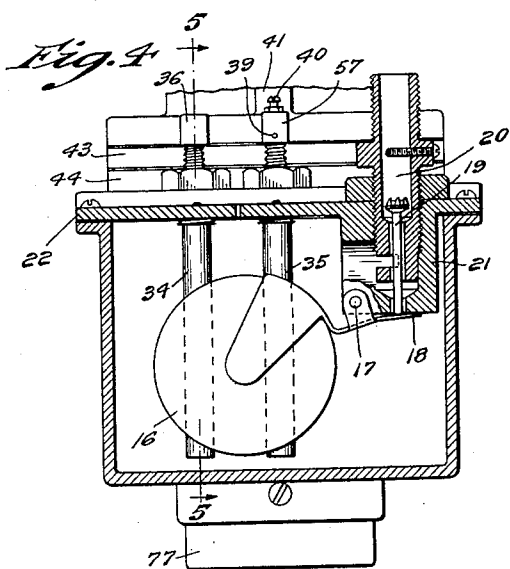
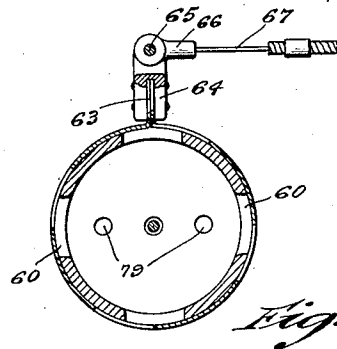
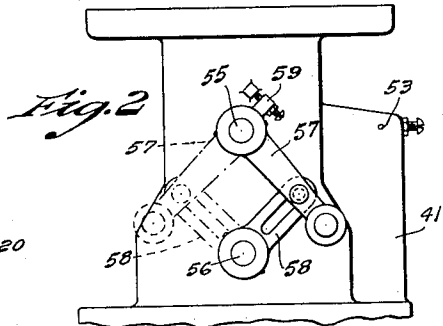
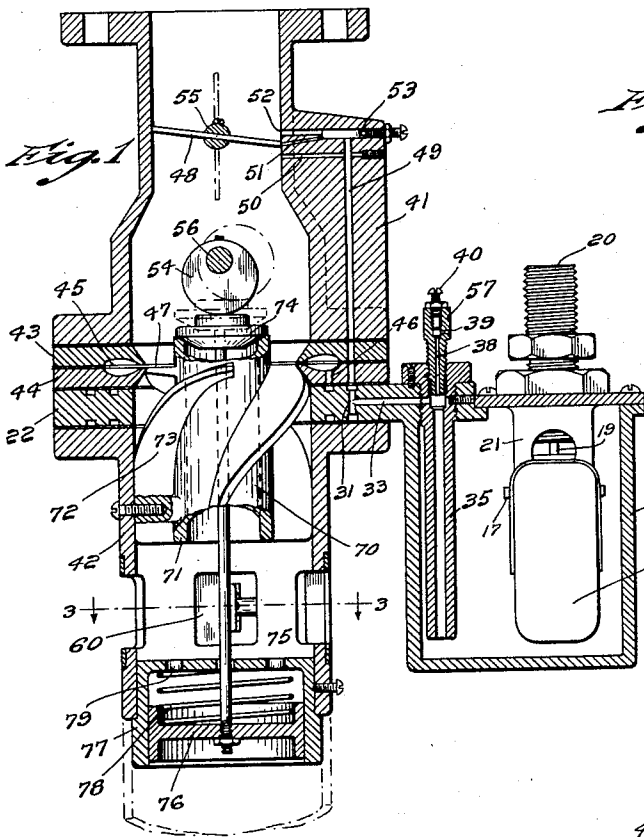
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1,959,907

UNIVERSAL TYPE CARBURETOR

Filed Aug. 7, 1933

2 Sheets-Sheet 1



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UNIVERSAL TYPE CARBURETOR

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2 Sheets-Sheet 2

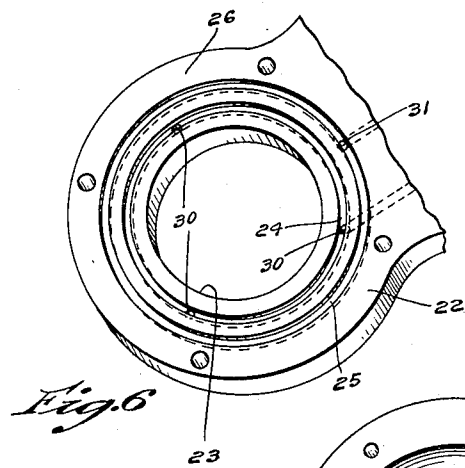


Fig. 6

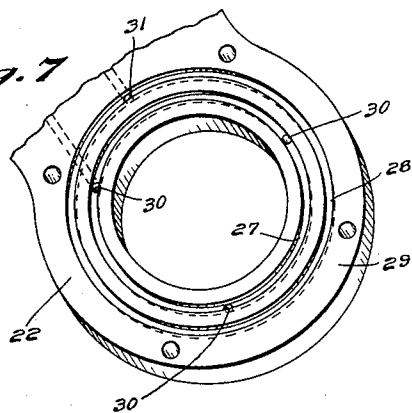


Fig. 7

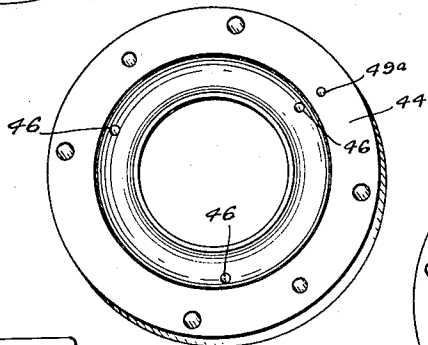


Fig. 8

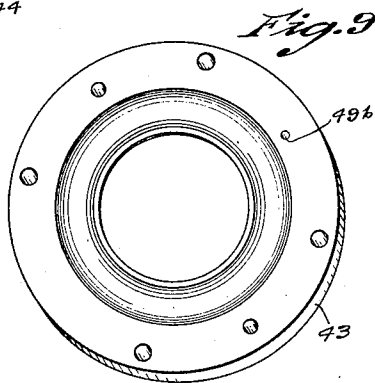


Fig. 9

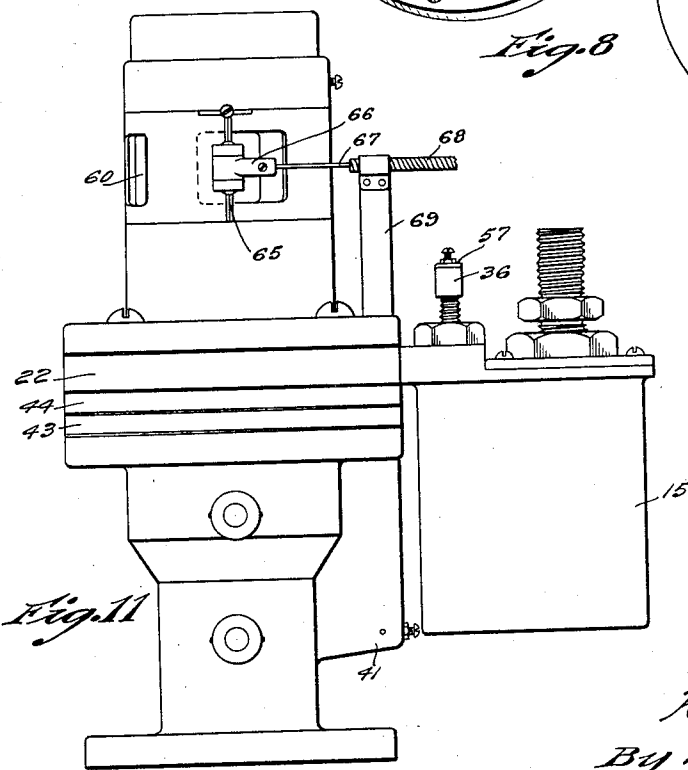


Fig. 11

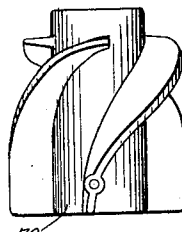


Fig. 10

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UNITED STATES PATENT OFFICE

1,959,907

UNIVERSAL TYPE CARBURETOR

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Application August 7, 1933, Serial No. 683,922

9 Claims. (Cl. 261-41)

My present invention relates to the carburetor art, and has particular reference to the features of construction of a universal type carburetor.

It is customary to design a carburetor for a particular engine model, as each model has design features that require special carburetor settings. Moreover, some engine designers prefer up-draft carburetors, and other designers favor down draft carburetors. The expense incident to carburetor manufacture is thus high, in view of the multiplicity of constructions heretofore found necessary; moreover, repair stations have found it difficult and costly to maintain the necessary replacement and repair parts. I have therefore devised a carburetor construction which is readily adaptable for all types of engines, and which may be utilized for either down or up-draft as desired.

With the above and other objects and advantageous features in view, the invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claims appended thereto.

In the drawings,

Figure 1 is a vertical section through the improved carburetor, arranged for up-draft;

Figure 2 is a fragmentary side view showing the flow control levers;

Figure 3 is a section on the line 3-3 of Figure 1;

Figure 4 is a vertical section through the float chamber;

Figure 5 is a sectional detail on the line 5-5 of Figure 4;

Figures 6 and 7 are perspective views of the upper and lower faces of the base plate;

Figures 8 and 9 are perspective views of the upper and lower flanges contacting the base plate;

Figure 10 is a vertical elevation of the air whirl vanes, and

Figure 11 is an elevation showing the carburetor changed to provide down draft.

Referring to the drawings, the novel carburetor includes a float chamber 15, having a float 16 of usual type pivotally mounted in the chamber, as at 17, and equipped with an arm 18 for contacting a needle valve 19 positioned in a fuel inlet passage 20 and cooperating with a valve seat 21 to control the passage of fuel from the inlet passage to the float chamber.

A base plate 22 extends laterally from the float chamber, and is preferably cast integral there-

with. The base plate has a circular opening 23 therethrough, and is provided with concentric grooves 24, 25 on the upper face 26, and identical grooves 27, 28 on the lower face 29, the inner grooves 24, 27 having a plurality of communicating passages 30; and the outer grooves 25, 28 having at least one communicating passage 31. As will be noted from Figures 1 and 5, one passage 30 and the passage 31 are connected with horizontal feed ducts 32, 33 which receive fuel from vertical feed tubes 34, 35 mounted in the float chamber, the feed tubes being formed to provide valve seats for closure valves 36, 37. The closure valve 37 has an auxiliary air passage 38 communicating with the atmosphere through an opening 39, the auxiliary air flow being controlled by a plug valve 40 adapted to be screwed down for flow regulation.

Referring to Figure 1, the carburetor includes an upper member 41 and a lower member 42 which are reversibly mounted on the base plate, as hereinafter explained. The upper member carries the fuel supply parts, which include two annular plates or rings 43, 44 shaped to provide a horizontal supply chamber 45 therebetween, which is fed from the inner groove 24 through a duct 46, the rings projecting inwardly and being spaced to form an annular horizontal flow nozzle 47 for discharging the fuel in the form of a thin sheet transversely across.

A throttle 48 is positioned in the upper, constricted, throat of the upper member, and an auxiliary feed passage 49, communicating with the groove 25 through the aligned ring openings 49^a, 49^b, has a plurality of transverse feeds 50, 51 and 52 for ensuring an adequate idling and starting fuel supply, the feeds 51 and 52 receiving auxiliary air through a plug controlled opening 53. A cam 54 is mounted within the lower part of the upper member; the throttle 48 and the cam 54 have operating shafts 55, 56 respectively extending through the upper member, the shafts being operated by a link 57, having a pin and slot connection with a link 58, in response to throttle movement. The link 57 is provided with an adjustable limit stop screw arrangement 59 of standard type.

The lower member 42 has a series of slots 60 functioning as air ports, and has a peripheral recess 61 to receive a cylindrical valve 62 for controlling the areas of the ports, the valve 62 being choke controlled in any suitable manner. A preferred construction is to provide the valve with a radial projection 63, as by forming the valve from sheet metal, and by receiving the

projection in a bifurcated clamp 64 which carries a pivot pin 65 on which a hinge member 66 is mounted, the hinge member detachably receiving the choke cable 67. Preferably, the outer cable casing 68 is held in a support member 69 secured to the base plate.

A whirl imparting device 70 is detachably mounted in the upper portion of the lower member, and includes a cylindrical shell 71 with the outer face provided with a plurality of arcuate vanes 72, these vanes being designed to impart a whirling motion to the ascending air, as hereinafter described, and to slightly compress the air prior to passage into the mixing chamber. The upper end of the shell 71 is formed as a valve seat 73 to receive an auxiliary air valve 74 which is contacted by the cam 54 to limit its upward movement, the stem 75 of the valve 74 extending downwardly through the shell to be detachably secured to a piston 76 seated in a spring housing 77 which is positioned at the lower end of the lower member. A spring 78 is mounted in the spring housing to resiliently press the piston downwardly and thus urge the valve 74 on its seat; the housing top is provided with the air vents 79 to permit movement of the piston in response to the suction produced by the engine.

The operation of the novel carburetor may now be explained. When the choke is closed, the cylindrical air inlet valve closes the air inlet ports, and the engine receives a very rich mixture. When idling, the engine receives a small quantity of fuel and air through passage 52; as the throttle is initially opened, fuel and air is fed through passages 50, 51 and 52. In normal running, the air enters through the inlet ports 60, and divides into two streams, one stream passing around the whirl imparting device to receive a whirling motion and to be slightly compressed, and passing through the fuel sheet from the horizontal nozzle 47 to produce an atomized primary mixture, and the second stream entering the shell 71 and emerging from the upper end of the shell as a conical sheet of secondary air crossing the initial atomized mixture. The amount of secondary air is controlled by the engine speed and the position of cam 54, the latter acting as a limit stop and the engine speed producing a suction lift of the piston 76 which in turn shifts the valve 74 upwardly.

The above described arrangement thus produces an initial atomized mixture and a secondary thorough mixture, the draft being up. Since the upper member seats on an annular portion of the base plate, it is evident that the base plate, and therefore the float chamber, may be readily turned in relation to the upper member, thus permitting accommodation to any type of motor, and to either side of the motor. Since the base plate has identical seats for the upper and lower members, these members may be readily reversed, the only change necessary being the provision of suitable accommodation for the throttle cable, which is within the skill of the mechanic.

It is thus evident that the novel carburetor permits a necessary or desired relative positioning of the mixture inlet and the float chamber to permit installation for any type motor, and on either side thereof, and may be set to provide either up or down draft, as desired.

While I have described a specific constructional embodiment of my invention, it is evident that desired changes in the relative arrangements and proportions of the parts may be made without

departing from the spirit and the scope of the invention as defined in the appended claims.

I claim:—

1. In a carburetor, a base, a member having an air inlet and detachably secured to one side of said base, and a second member having a mixture outlet and detachably secured to the other side of said base, a float chamber, means for conveying fuel from said float chamber to said base to form a primary mixture with air from said first member, and means for carrying fuel from said float chamber to said second member to form a secondary mixture with air from said first member, said base being adapted to detachably receive either member on either side thereof.

2. In a carburetor, a base having an opening therethrough, a member detachably secured to one side of said base and having an air inlet in alignment with said opening, and a second member detachably secured to the other side of said base and having a mixture outlet in alignment with said opening, a float chamber, means for conveying fuel from said float chamber to said opening to form a primary mixture with air from said first member, and means for carrying fuel from said float chamber to said second member to form a secondary mixture with air from said first member, said members being interchangeably mountable on either side of said base.

3. In a carburetor, a base having an opening therethrough, a member detachably secured to one side of said base and having an air inlet and air whirling means in alignment with said opening, and a second member detachably secured to the other side of said base and having a mixture outlet in alignment with said opening, a float chamber, means for conveying fuel from said float chamber to said opening to form a primary mixture with air from said first member, and means for carrying fuel from said float chamber to said second member to form a secondary mixture with air from said first member, said members being interchangeably mountable on either side of said base.

4. In a carburetor, a base having an opening therethrough, a member detachably secured to one side of said base and having an air inlet in alignment with said opening, and a second member detachably secured to the other side of said base and having an air and fuel mixing chamber and a mixture outlet in alignment with said opening, a float chamber, means for conveying fuel from said float chamber to said mixing chamber to form a primary mixture with air from said first member, and means for carrying fuel from said float chamber to said second member to form a secondary mixture with air from said first member, said members being interchangeably mountable on either side of said base.

5. In a carburetor, a base having an opening therethrough, a member detachably secured to one side of said base and having an air inlet and air whirling means in alignment with said opening, and a second member detachably secured to the other side of said base and having an air and fuel mixing chamber and a mixture outlet in alignment with said opening, a float chamber, means for conveying fuel from said float chamber to said mixing chamber to form a primary mixture with air from said first member, and means for carrying fuel from said float chamber to said second member to form a secondary mixture with air from said first member, said members being interchangeably mountable on either side of said base.

6. In a carburetor, a float chamber, a base connected thereto, a member having an air inlet, a second member having an air and fuel mixing chamber and a mixture outlet, said members
 5 being detachably securable to either the upper and lower face of said base, and means for feeding fuel from said float chamber to said second member in either position.

7. In a carburetor, a float chamber, a base
 10 connected thereto, a member having an air inlet and an air whirling device, a second member having an air and fuel mixing chamber and a mixture outlet, said members being detachably securable to either the upper and lower face of said base,
 15 and means for feeding fuel from said float chamber to said second member in either position.

8. In a carburetor, a base having parallel upper and lower faces and aligned annular fuel grooves on said faces and a communication duct between the aligned grooves, a float chamber, and a conduit for conducting fuel from said float chamber
 80 to said grooves.

9. In a carburetor, a base having parallel upper and lower faces and aligned annular fuel grooves on said faces and a communication duct between the aligned grooves, a float chamber, and a conduit for conducting fuel from said float chamber
 85 to said communication duct.

HARVEY G. EBERT.

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