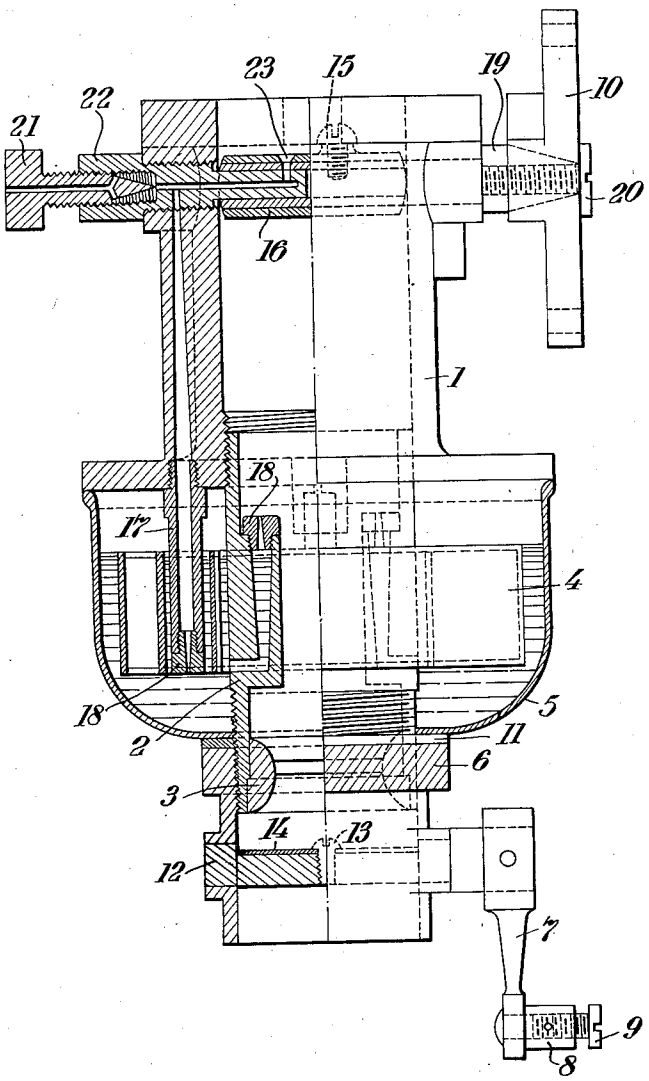
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CARBURETOR

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CARBURETOR

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The present invention relates to improvements in the manufacture of carburetors for internal combustion engines and is characterized by various constructional modifications introduced into this type of apparatus, which not only simplify its operation and actuation but also assure greater efficiency and automatic action, particularly on slow running. These general advantages are a consequence of the various features combined in the apparatus.

According to the present invention there is provided a carburetor for internal combustion engines characterized by the fact that a by-pass intake is provided in combination with the main intake, and that the by-pass intake is used instead of the main intake when the engine is running idle. Preferably the throttle control of the main intake also controls the by-pass intake, the arrangement being such that, when the main intake is closed, the by-pass intake is opened and vice versa.

In the main intake there are preferably provided two or more jets or nozzles, and as a result a more homogeneous and explosive mixture is produced than with carburetors used heretofore, and at the same time better acceleration and easier starting is obtained.

In the carburetor according to the present invention all levers and control devices for additional air are omitted, only two controls being used, one for the gases and one for the air.

Other features of the invention will appear from the following specification, and by reference to the attached drawing, which illustrates diagrammatically partly in elevation and partly in section, a carburetor constructed according to the present invention.

The carburetor shown on the drawing comprises the following members:

A body 1, which is attached at its upper part to the inlet pipe of the engine, and to the lower part of which is attached a central tubular member 2, screwed internally thereto. This central member 2 is provided at its lower part with a choke member 3, which controls the intake in a fixed manner. Around this central member is disposed a constant level chamber 5, in the interior of which is disposed the float 4, which operates in known manner. This constant level chamber is held in position against the member 1 by a sleeve member 6, which is screwed on the member 2. In this member 6 is mounted an air strangler comprising an operating lever 7, provided with fixing means 8 and 9 for an actuating device, and a control shaft 12, to the top of which is fixed the strangler 14 by means of the screw 13. Between the member 6 and the constant level chamber 5 and around the lower part of the central member 2, there is disposed a packing 11 for hermetical sealing.

At the upper part of the member 1 is disposed the throttle 16, mounted upon a shaft 19 and secured by a fixing screw 15. To one end of the shaft 19 is secured the operating lever 10 fixed by a screw 20. At the opposite end, the shaft is supported by a member 22, screwed into the body 1 and hollow in the direction of its axis, this hollow portion forming a passage which extends through the part acting as a support for the shaft 19.

Screwed into the free end of the member 22 is a screw 21 terminating in a needle point and axially bored in such a manner that it enables air to pass therethrough towards the passage formed in the axis of member 22, and at the same time forms a needle valve for closing the said passage.

As will appear hereinafter, the said screw is utilized for controlling idle running.

In the body 1, exactly underneath the member 22, is disposed the by-pass intake passage 17, the upper part of which terminates at the passage formed in the member 22 and the lower part of which extends into the interior of the petrol filling of the float chamber and terminates in a jet 18 or jets. In the throttle 16 and shaft 19 an opening 23 is formed, which coincides with the passage formed in the member 22 when the position of the shaft 19 is such that mixture is cut off by the throttle.

Finally, within the member 2 there are disposed two or more passages terminating in jets 18*a*, which open into the main intake pipe of the carburetor, in the interior of the member 2.

The operating of the device above described is as follows:

For starting, the throttle arrangement 16 is left partially open and the air strangler 14 is closed, whereby directly above the jets 18*a* suction is established which will form a requisite carburetted mixture and consequently cause the initial explosion to take place with the greatest rapidity and certainty. Once the ability of the engine to run is established the strangler 14 is opened and the throttle 16 is closed, slow running being continued with the aid of the opening 23, which communicates with the passage formed in the member 22 and through this with the intake passage 17 submerged in the constant level chamber, a larger or smaller suction being established

according to the capacity of the jet or jets disposed at its lower end. The petrol intake thus established may be modified by the control exercised by the control screw **21**, which at the same time permits air to enter through its central bore, said air mixing with the petrol which has been lifted up. Thus the amount of petrol may be adjusted according to whether the amount of air entering is larger or smaller, until the minimum petrol consumption necessary for the running of the engine with a minimum number of revolutions is reached.

When acceleration is started and the throttle **16** is opened the engine will develop an energetic suction, which will be exerted directly upon the jets **18***a* disposed in the member **2**, and simultaneously, the movement of the throttle shaft will cause the coincidence of the opening **23** with the passage formed in the member **22** to cease, thereby cutting off the intake of petrol through the passage **17**. Further opening of the strangler will effect the strongest possible intake of air at high velocity through the choke **3**, which will pick up and mix intimately with the petrol issuing from the jets **18***a*.

From the above description it will be seen that automatic closure of the petrol by-pass intake utilized in slow running will take place, and that the supply of a rich and potent mixture adjusted at will is assured upon acceleration without requiring undue petrol consumption, since the mixture is adjusted in an absolutely automatic manner between the jets and the intake pipe, thus always giving an energy consumption which is proportional to the output energy developed by the engine.

The fact that two or more jets **18***a* are provided completely eliminates stoppages of the engine by jet obstruction, and it may even be considered that complete obstruction of all the jets is absolutely impossible. Moreover if one or more of the jets become unserviceable it is only necessary when the engine ceases to function normally to slightly close the air strangler, and it is still possible at a reduced speed, to reach the nearest service station.

It is to be understood that the invention may undergo modifications in respect of its general arrangement and the member or members forming it without departing from the scope of the invention as herein ascertained.

I claim:

1. A carburetor for internal combustion engines comprising a tubular body, a constant level float chamber beneath said body, a tubular member passing through said chamber and secured at its upper end to said tubular body, a sleeve secured to said tubular member and holding said float chamber in place, said tubular body and said tubular member and said sleeve constituting a single passage, a strangler located in said sleeve, a choke member located in said tubular member adjacent the end thereof which is adjacent said sleeve, fuel ducts each communicating at one end with the fuel chamber and at its other end with a jet element delivering into said tubular member above said choke, a throttle valve in said tubular body, a by-pass duct from said float chamber to said throttle valve, an air inlet valve cooperating with said by-pass duct, and means governed by said throttle valve for opening said by-pass duct to communicate with said tubular body on the suction side of said throttle valve when said throttle valve is closed and for shutting off said by-pass while said throttle valve is open.

2. A carburetor for internal combustion engines, comprising a suction duct having an intake and an outlet end, the latter being adapted for connection to the intake of an engine, a constant level float chamber surrounding said suction duct, fuel ducts and jets to deliver fuel into said suction duct, a strangler in said suction duct adjacent the intake end of the same, and a throttle valve in said suction duct adjacent the outlet end of the same, said throttle valve including a shaft having a hollow portion, a supporting member projecting into said hollow portion and having a passage communicating with ports in said shaft and throttle valve which deliver to the suction side of said throttle valve and are controlled by the position of said throttle valve, the passage in said supporting member communicating through a duct with fuel in the float chamber, the passage of said supporting member also having a portion for communicating with the atmosphere, and a screw threaded into said portion and formed with an air passage and a needle point in virtue of which said screw functions as a means to regulate the amount of air and petrol which the engine may aspirate via the supporting member's passage.

3. In carburetors having a fuel reservoir and main and by-pass fuel jets delivering therefrom into a passage which is connectible to the intake of an internal combustion engine; a throttle valve in said passage and including a shaft, a stationary supporting member comprising a bearing for said shaft, said shaft having a hollow portion to receive said supporting member, said supporting member having a passage communicating at its outer end with the atmosphere and at its inner end with a port that registers with a similar port in said shaft only when said throttle valve is closed, said ports delivering to the suction end of said passage, a screw-valve in the outer end of said supporting member's passage and having a point to act as a valve for said passage, said screw-valve having an air passage, and a by-pass duct from said fuel chamber to said supporting member's passage entering the same between said fuel valve and said screw-valve, in virtue of which said screw-valve may be used to regulate the amount of air and petrol which the engine may aspirate while idling.

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