July 14, 1931. V. R. HEFTLER 1,814,804

CARBURETOR

Filed June 22, 1922

Fig. 1.

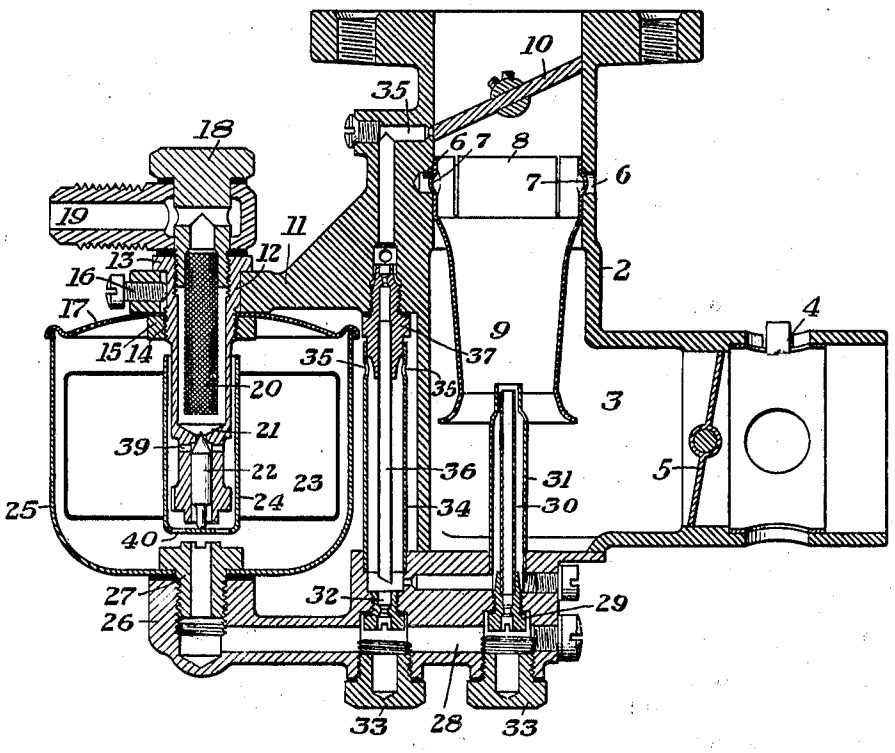
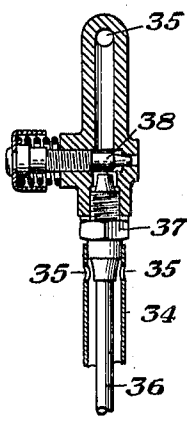


Fig. 2.



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CARBURETOR

Application filed June 22, 1922. Serial No. 570,117.

The present invention relates broadly to carburetors and more particularly to the type especially adapted for use with internal combustion engines.

It has heretofore been proposed, to provide carburetor float chambers with direct acting gasoline inlet valves. Such constructions have, however, not only required accurate machining of the top and bottom guides in order to prevent binding, but they have resulted in a gasoline flow downwardly upon and around the float. The effective gasoline head with such constructions has also been decreased to such an extent as to be objectionable in hill climbing and particularly with comparatively low supplies of fuel.

It has also been proposed to provide a central guide stem for the float. This, however, has required a needle valve positioned off-center with respect to the float. Such construction has tended to produce an objectionable binding action on the valve whereby the operation has not been altogether satisfactory.

The present invention provides a carburetor, which from a constructional and assembly standpoint is greatly simplified, and which successfully overcomes objections such as have heretofore presented theinselves in this art. It also provides a readily accessible filter, an easily inserted venturi and an improved float chamber, all of which may be inexpensively and expeditiously produced and assembled.

In the accompanying drawings, I have shown for purposes of illustration only, one embodiment of the present invention, it being understood that the drawings do not define the limits of my invention, as changes may be made in the construction and operation without departing from the spirit of my invention or scope of my broader claims.

In the drawings,—

Figure 1 is a sectional view through a carburetor embodying the present invention; and

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

In carrying out the present invention there is preferably provided a main body member 2 in the form of a casting. This member may, if desired, be constructed of a corrodible metal, such as cast iron, whereby the cost of the construction is greatly reduced, as disclosed in my co-pending application Serial No. 531,647, filed January 25th, 1922. Extending through the casting is the usual air inlet passage 3 which may be provided with an auxiliary air inlet control 4 and with a choke valve 5.

The member 2 may be provided with any desired number of openings 6 intersecting the air inlet 3 and adapted to receive suitably shaped bosses 7 formed on the spring arms 8 of the venturi 9. By reason of this construction it will be apparent that the venturi may be formed as a simple stamping, the spring arms permitting it to be easily inserted or removed and the bosses 7 holding it in proper position. This forms a suitable mixing chamber, the outlet from which may be controlled by a suitable throttle valve 10 as is customary in the art.

Projecting laterally from one side of the member 2 is a shelf 11 provided with a vertically extending opening adapted to slidably receive a stem 12. This stem is preferably provided with an upper flange 13 adapted to rest against the upper surface of the shelf 11 and is provided with an intermediate threaded portion 14 adapted to cooperate with the nut 15. After the stem has been inserted in position, it may be clamped by the set-screw 16. Thereafter the float chamber cover 17, which may be either spun or stamped from suitable material, is slipped over the lower end of the stem and clamped in position by the nut 15.

The upper end of the stem 12 may be internally threaded to receive a nut 18, by means of which the gasoline inlet 19 may be adjustably clamped in position. Carried by the nut 18 and projecting downwardly into the central opening in the stem 12, is a gasoline filter 20. It will be apparent that this construction permits the gasoline inlet 19 to be readily adjusted as required in installing the carburetor, and that the filter is readily accessible for cleaning and insepction.

Intermediate its length, and at substan-

tially the point of intersection of the median horizontal and vertical planes extending through the float chamber, is a seat 21 for the needle valve 22, longitudinally movable in the lower end of the stem 12. Th needle valve is adapted to be directly operated by a float 23 surrounding the stem 12 and provided with a central cup-shaped member 24, the bottom of which engages the lower end of the valve 22. By reason of this construction, it will be apparent that as the float rises it will directly operate on the valve 22 to cut off the supply of gasoline, while as it lowers the reverse operation will take place.

The main body of the float chamber may comprise a suitable stamping 25 adapted to be clamped in position on a base member 26 by means of a hollow nut 27. The base member 26 is preferably composed of non-corrodible metal, such as brass, whereby the action of the gasoline thereon and of the water content in the gasoline supply does not tend to clog up the fuel openings. This base member may be secured to the main body member 2 in any desired manner, whereby it may be readily removed, as will be apparent.

Formed in the base member 26 is a main feed channel 28 adapted to supply fuel through the calibrated opening in the plug 29 to the main jet 30. The channel 28 also supplies a compensating jet 31 with fuel through the calibrated opening in a second plug 32. Access to the plugs containing the calibrated openings 29 and 32 may be obtained by removal of the plugs 33.

Also carried by the base member 26 is a tube 34 adapted to receive fuel from the channel 28 through the calibrated opening 32. This tube may be provided with suitable openings 35 to the atmosphere, whereby it forms an atmospheric well. This well may supply fuel to a suitable slow speed feeding device terminating in an opening adjacent the throttle by means of a quill 36 carried by the plug 37 and extending downwardly into the atmospheric well. The slow speed device is preferably in the form of an air-bled jet the supply of air being controlled by a suitable valve 38, as illustrated more particularly in Figure 2.

By reason of the construction herein illustrated, it will be apparent that it is possible to utilize simple stampings both for the venturi and for the float chamber. The venturi is easily inserted in position and the float chamber may be readily clamped between the shelf 11 and the base member 26.

The provision of the central stem 12 is of considerable importance, as it forms a guide for the float 23 and forms a seat for the valve 22. It also guides the valve 22 in its movement and makes it unnecessary to provide separately machined top and bottom guides therefor. The valve is concentrically positioned with respect to the float chamber, whereby torsional strains such as occur in constructions where the valve is off-center are entirely obviated.

Still further advantages of the present invention arise from the location of the valve seat 21 at a point intermediate the upper and lower surfaces of the float. In this manner there is provided a greater head for the fuel than exists in constructions having the seat for the gasoline inlet valve above the float. The fuel also enters directly into the stem, passes the valve 22, flows through the radial openings 39 in the stem 12 and thence through the openings 40 in the cup 24. This obviates the objectionable flowing of gasoline upon and around the float. This concentrates all of the mechanical functions of the gasoline inlet contral and float guide in a single member in the form of a stem whereby the main body of the constant level chamber and the cover may comprise simple stampings as they need perform no functions other than those of container and cover, respectively.

I have also found the use of a detachable venturi formed as a stamping and having an upper cylindrical portion, is very desirable as it may be inexpensively manufactured as a stamping and easily inserted in position.

I claim:

1. In a carburetor, a main body member having a laterally projecting shelf, a resilient cover secured thereto, a base member directly and rigidly secured to said main body member at a point laterally of said shelf and independently thereof and having a portion projecting laterally in spaced relation to said shelf but disconnected therefrom, and a float chamber carried by said portion at its lower end and cooperating with said resilient cover at its upper end.

2. In a carburetor, a rigid body member having a rigid shelf, a rigid base member rigidly secured to said body at a point laterally of said shelf and independently thereof, said base having a rigid portion projecting laterally therefrom, a float chamber carried by said rigid portion, and a resilient cover carried by said shelf and yieldingly cooperating with the upper portion of the float chamber.

3. In a carburetor, a main body member having a laterally projecting shelf provided with an opening therethrough, a stem projecting downwardly through said opening and detachably clamped in position therein, a fluid supply connection cooperating with said stem, a filter within said stem, a seat formed in said stem below said filter, a needle valve cooperating with said seat and guided by said stem, a float surrounding said stem, and means carried by said float for actuating said needle valve and holding it in position within said stem.

In testimony whereof I have hereunto set my hand.

VICTOR R. HEFTLER.