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O. HENNING

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LIQUID FILTER FOR CARBURETOR

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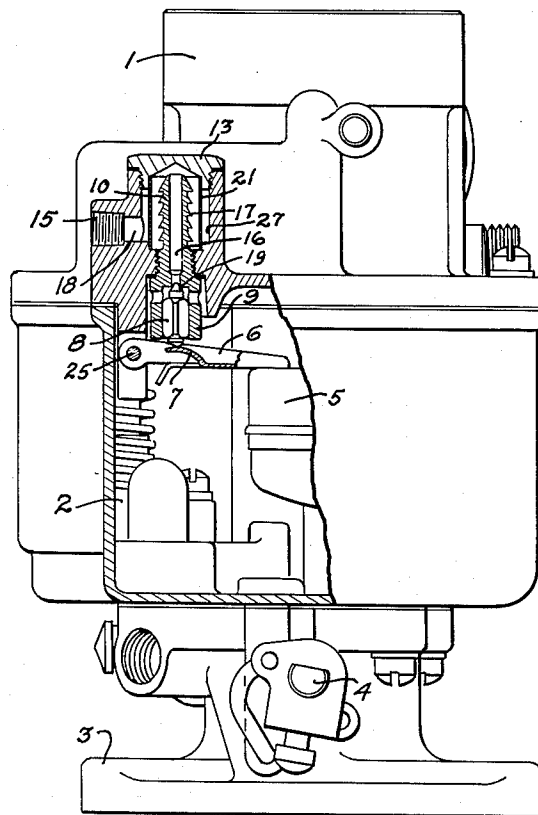


FIG. 1.

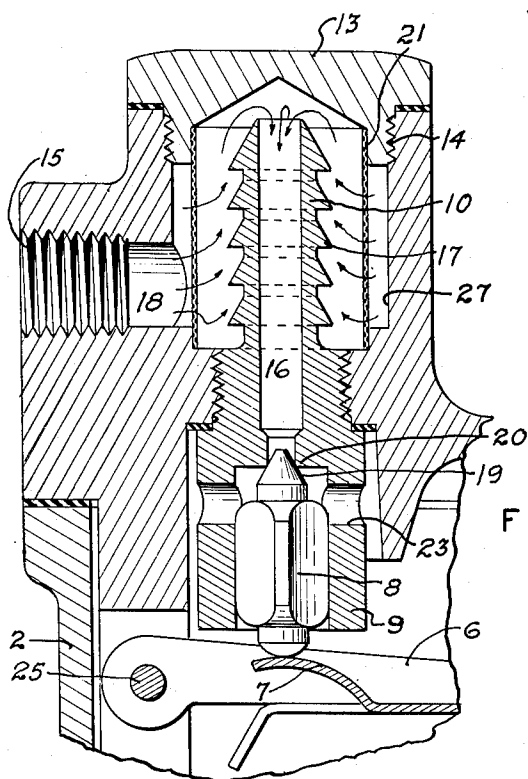


FIG. 2.

INVENTOR.
OTTO HENNING

BY

Joseph H. Eriksen

ATTORNEY

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LIQUID FILTER FOR CARBURETOR

Otto Henning, Clayton, Mo., assignor to Carter Carburetor Corporation, St. Louis, Mo., a corporation of Delaware

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3 Claims. (Cl. 210-166)

This invention relates to carburetors and, more particularly, to a device for separating solids from liquids, embodied in the carburetor and forming a portion of the fuel inlet passage.

Carburetors generally incorporate a constant level fuel chamber, termed a "fuel bowl." The fuel supply to the bowl is opened and closed by a float-controlled needle valve for establishing a constant fuel level in the fuel bowl. It is also customary to meter the flow from the fuel bowl to the several nozzles by means of metering orifices or needles. All of the several parts above mentioned are vulnerable to particles of foreign matter which may be, and often are, pumped from the main fuel tank to and through the carburetor.

It is inevitable that such particles of foreign matter, when present, will adversely affect the operation of the carburetor by their presence in the fuel stream at the points above mentioned, since the proper functioning of such a mechanism requires that the needle valve controlling fuel level make a proper seat, and that the metering orifice remain open and free from obstruction or erosion.

The present invention incorporates in the carburetor, adjacent the fuel inlet to the float control needle valve, an easily accessible chamber containing a device highly efficient in action for the purpose of separating foreign matter from the liquid fuel.

An important object of the invention is to provide a filtering device forming a part of the carburetor, which may be easily removed for cleaning without disturbing the connections from the fuel supply to the carburetor or removing the carburetor from the engine.

Another object of the invention is to provide in a filtering device such as above described, a standpipe provided with an outer surface designed to intercept the flow from the inlet to the carburetor and to prevent suspended particles of foreign matter in the fuel from creeping up the outer side of the standpipe, and in this manner finding access to the metering and controlling valves within the carburetor.

Other objects of the invention will become apparent as the description proceeds. One embodiment illustrative of the invention is shown in the accompanying drawings, in which:

Fig. 1 is a side elevation of a carburetor with parts broken away to show the location of the filtering device.

Fig. 2 is a fragmentary detail view in section, showing the improved device in detail.

The carburetor of the present invention is shown generally in Fig. 1, and comprises a mixing tube 1, below which is located the usual fuel bowl 2. A flange 3 is provided whereby the carburetor may be attached to the intake manifold. Above the flange is a throttle valve shaft 4, which mounts a throttle (not shown) controlling the supply of air and fuel to the manifold. Within the fuel bowl 2 is a conventional type of float valve for controlling the liquid level therein. The float valve comprises a float 5 mounted on an arm 6, pivotally mounted

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at 25 for vertical movement within the fuel bowl. Struck from the arm 6 is a cam surface 7 for cooperation with the rounded lower end of needle valve 8. The valve 8 is provided with an enlarged medial portion, intermediate its valve surface 19 and its rounded lower end, having a plurality of flats to provide ribs for guiding the movement of the needle valve vertically within its cage 9. Adjacent the valve surface 19 of the needle valve is a seat 20 provided in the cage 9 for controlling the flow of fuel. Below the seat are outlet passages 23, through which the fuel may pass as it escapes past the needle valve into the fuel bowl 2. Extending upwardly from the valve cage 9 is a standpipe 10 provided with a plurality of circumferentially extending ribs which, as here shown, are in the shape of saw teeth in cross-section, but it is obvious that this particular shape is not critical. Most any configuration is suitable, so long as downwardly-facing, abrupt shoulder or shoulders are provided extending circumferentially of the standpipe. The standpipe extends into a chamber 27 formed in the body of the carburetor, which, as here shown, is in the form of a cylindrical well. The cage 9 and standpipe 10 form the needle valve seat unit.

In order to seal the open upper end of the well, a cap 13 is provided which is screw-threaded for engagement with threads 14 at the upper open end of the well. The upper internal surface of the well is provided with a cylindrical recess in which is mounted a fine filtering screen, or the like, 21. As shown in Fig. 2, when assembled, the cap 30 holds the cylindrical filtering element 21 within a like cavity formed internally of the cup-like chamber 27. Located adjacent the lower extremity of the filtering element and the well is a fuel inlet 18 extending laterally therefrom and provided with threads 15 to which the fuel supply line may be attached.

It can be readily understood that, in such a device, the filtering chamber is accessible for cleaning simply by removing the plug 13. This will, in turn, allow the filtering element to be easily removed and the chamber to be wiped clean or blasted clean with an air jet.

In operation, fuel enters through the lateral passage 18 and fills the chamber 27 exterior of the filtering element 21. In passing through the filtering element, any large particles of foreign matter will be separated and, of course, most of the small particles. However, any of the latter which do manage to penetrate the filter will settle towards the bottom of the well-shaped chamber. There is always a tendency, therefore, for these finer particles which do escape the filter 21 to progressively climb the outer surface of the standpipe element 10, and thereby gain access to the passage 16 and interior of the carburetor. To prevent this, a series of abrupt shoulders 17 are provided on the exterior surface of the standpipe. It has been found that, with such an arrangement, the finer particles of foreign matter, which are sometimes slightly buoyant, will be trapped from climbing the exterior surface of the standpipe, and thereby prevented from entering passage 16.

The above-described device has been found to be very effective for the purpose of excluding foreign matter from entering the fuel bowl and thereby affecting the operation of the needle float valve 19 with its seat 20, as well as the operation of small metering passages within the carburetor itself. It will be obvious, however, that various changes in the specific structure may be made without departing from the spirit of the invention, which is set forth only by the terms of the appended claims.

I claim:

1. In a carburetor, the combination of a well having an inlet and outlet, a valve cage member in said outlet having an axial fluid passage, an open standpipe having abrupt peripheral downwardly-facing surfaces and extend-

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ing into said well and forming an extension of said valve cage and said fluid passage, a closure for said well, support means internal of said closure, and a tubular filter surrounding said standpipe and supported by said closure:

2. In a fuel supply device, the combination of a well having an inlet and outlet, a valve cage member in said outlet having an axial fluid passage, an open topped standpipe having abrupt peripheral downwardly-facing surfaces and extending into said well and forming an extension of said valve cage and said fluid passage, and a tubular filter surrounding said standpipe.

3. In a needle valve seat unit for a carburetor, the combination of a valve cage member having an axial fluid passage, a valve guide and seat at one end of said passage, an open standpipe extending from said unit and forming an extension of said axial fluid passage, a shoulder external of said standpipe having an abrupt peripheral surface adapted to face in an upstream direction to trap

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sediment from the fluid flow external of said standpipe and thereby prevent the entry of foreign particles to said needle valve seat unit, and means located spaced from said shoulder on the outer surface of said standpipe for securing said unit in position.

References Cited in the file of this patent

UNITED STATES PATENTS

731,346	Delmouly	June 16, 1903
893,070	Gobbi	July 14, 1908
979,555	Peterson	Dec. 27, 1910
1,602,935	Rasey	Oct. 12, 1926
1,635,845	Holford	July 12, 1927
1,814,118	Bracke	July 14, 1931
2,007,336	Malivert	July 9, 1935
2,462,488	Gunn	Feb. 22, 1949