

[54] CARBURETOR APPARATUS

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[57] ABSTRACT

For use in a carburetor which incorporates a venturi through which a draft is formed, an injector means which includes an elongate hollow tube portion which is connected to a fuel supply and having a valve therein, the valve comprising a drilled rotatable threaded plug intercepting the passage, the passage terminating in an opening. The opening is formed in a downwardly facing passage which is countersunk with an offset. The two passages enable air flow through the venturi to pass near the opening where the fuel emerges. However, the countersunk arrangement positions the opening on the lower side of a shoulder. In the event of backfeed, fuel cannot flow upwardly in the venturi or past the injector apparatus. During conventional operation, the downward flow of air through the venturi sweeps past the undercut shoulder tending to create what is believed to be an enhanced vacuum improving the vaporization of the fuel.

3 Claims, 3 Drawing Figures

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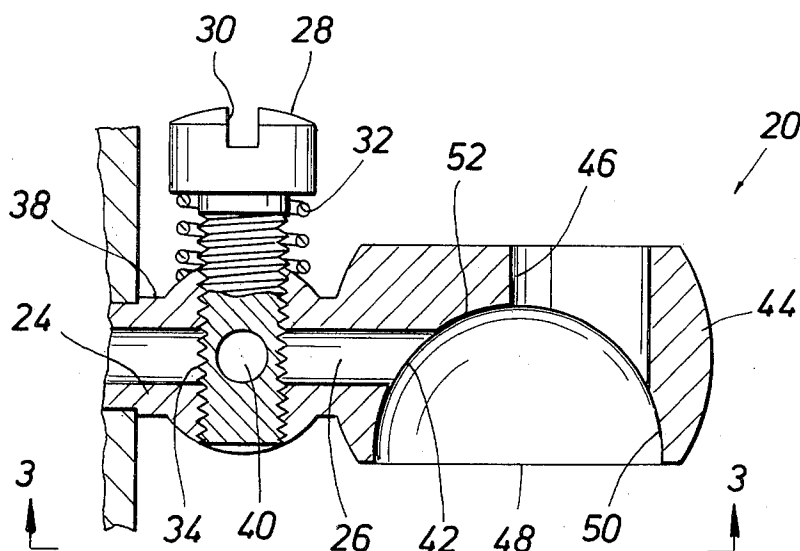


FIG. 1

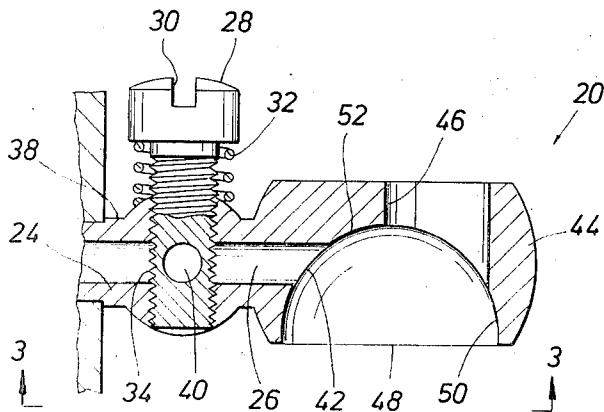
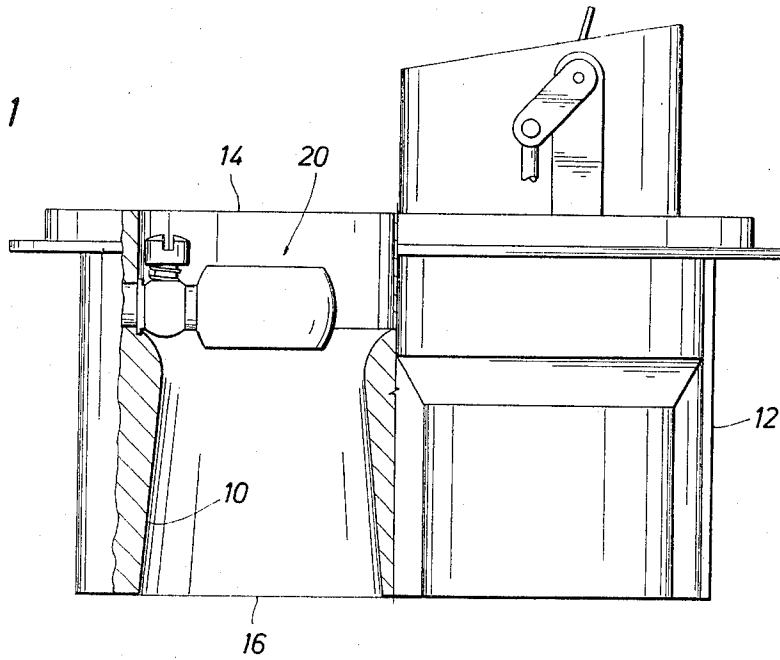
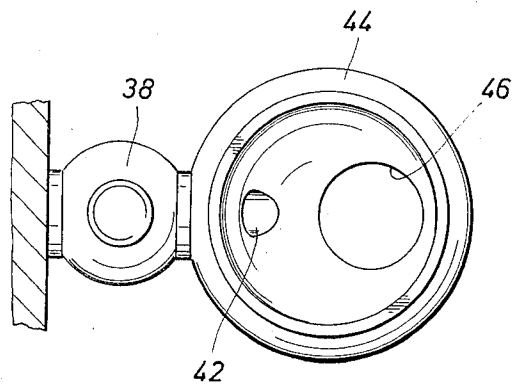


FIG. 2

FIG. 3



CARBURETOR APPARATUS

BACKGROUND OF THE INVENTION

The present apparatus is directed to an improvement in carburetors which aids and assists vaporization of the fuel which is injected. Attempts have been made heretofore to improve the performance and operation of carburetors. Many reasons can be conjectured for at least the mediocre operation of carburetors known heretofore. The improvement of the present invention is believed to be an improvement in that it has enhanced vaporization capabilities and means for preventing fuel feeding a backfire, other than the fuel which had been previously vaporized in the venturi of the carburetor. Accordingly, the present invention is believed to provide enhanced fuel performance and a more even mixture of fuel in the air. It is believed that the vaporization is improved. Furthermore, the apparatus functions to enhance the vacuum, it is believed, to more rapidly vaporize the fuel as it is injected into the venturi.

SUMMARY OF THE PRESENT INVENTION

An injector for a carburetor is disclosed which is adapted to be connected with a fuel line and positioned in the throat of a venturi carburetor. It is normally positioned below the choke. The apparatus includes a valve located in a tubular portion which connects with the fuel line. The valve is adjustable to control metering of fuel to the carburetor. Fuel flow is otherwise normally controlled. The injector apparatus of the present invention includes a body appended to the end of the passage means which is preferably positioned approximately in the center of the venturi throat. The body is drilled from top to bottom with a first passage. The nether side of the enlargement is countersunk in an offset fashion relative to the vertical passage. This forms an undercut shoulder when viewed from above. Fuel is injected at a point below the undercut shoulder. It is submitted that the fuel flow is all downwardly directed, not upwardly as might occur in the event of a backfeed. Moreover, it is believed to be improved in that vaporization of the fuel is enhanced.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 discloses the fuel injector of the present invention installed in the throat of a venturi carburetor;

FIG. 2 is a sectional view along the center line of the fuel injector of the present invention; and,

FIG. 3 is a bottom view of the fuel injector apparatus showing the undercut shoulder where the fuel is actually injected into the carburetor.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. 1, a carburetor venturi 10 is formed in a carburetor body 12 and has an upper opening 14 which opens downwardly at 16 for connection to an intake manifold. The present invention is generally indicated by the numeral 20 and protrudes into the venturi. It is preferably mounted about in the center of the venturi throat. It extends from a sidewall of the venturi and is adapted to be connected with a fuel line (not shown). Fuel is delivered through the fuel line to the injector means of the present invention. The fuel is vaporized by the venturi carburetor, the other portions thereof functioning in the customary manner.

In FIG. 2, the present invention is shown in greater detail. It includes a tubular portion 24 which is adapted to be threaded or otherwise joined to an opening where the fuel line emerges. It includes a central passage 26 which serves as a portion of the fuel line. A valve is preferably incorporated to control in a fixed manner the rate of flow of fuel to the carburetor. A valve is shown in FIG. 2. In the embodiment shown, the valve includes a threaded stem 28 which has a screwdriver adjustment slot 30. It is preferably spring loaded by a spring 32 which prevents creepage of the bolt 28. The stem 28 is preferably threaded at 34 engages a similar or matching set of threads formed in an enlargement 38. The enlargement 38 has an adequate number of threads for engaging the stem. The enlargement 38 is drilled and tapped to accept the threaded stem. Moreover, it intercepts the passage 26. The stem itself is preferably drilled with a perpendicular hole 40. As the stem 28 is rotated, the transverse passage 40 is either fully aligned, fully misaligned or partially aligned with the passage 26. The shoulder of the passage 26 which abuts the threaded valve member 28 serves as a seat while the stem 28 functions as a valve element. In other words, the valve element is incorporated in the stem which rotates the valve. Partial opening of the valve achieves a degree of control for metering of fuel.

Other types of valves can be incorporated but the illustrated apparatus constitutes what is the preferred valve embodiment. Other embodiments may have advantages for different problems and different installations.

Fuel flows past the valve at a metered rate in the passage 26 to the opening 42. The opening 42 is in an enlargement 44. The enlargement 44 has an external surface which somewhat stermlined and is preferably circular. It has a vertical passage 46 drilled in it. The passage 46 permits air to flow through the injector. The passage 46 is preferably circular in section but it is somewhat off center relative to the enlargement 44. The enlargement 44 has a lower face 48. A centered, drilled countersink is formed at 50 in the lower face 48. The passages 46 and 48 intersect. However, they differ in size and are offset one to the other to form an overhanging shoulder 52. The shoulder 52 is immediately adjacent to the opening 42. It overhangs so that the opening 42 is somewhat sheltered from the rush of air downwardly through the venturi. The overhanging feature has two advantages to the extent that the theory of operation is understood at this juncture. It is believed that the overhanging shoulder at 52 prevents the upward flow of fuel in the event of backfeed or the like. An additional advantage is that the rush of air through the opening 46 is believed to create an enhanced vacuum in the immediately vicinity of the opening 42 to more rapidly vaporize the fuel. The theory herein advanced is not believed to be proven conclusively in that it is difficult to obtain dynamic measures of performance of the fuel injector apparatus.

The foregoing is directed to the preferred embodiment. Various modifications can be included such as different types of valves. Moreover, the opening 42 may be reduced in diameter in comparison with the passage 26 to provide a choked flow.

The scope of the present invention is determined by the claims appended hereto.

I claim:

1. An injection apparatus for a carburetor, comprising:

an elongate side wall supported member adapted to be connected at one end to a fuel line and further adapted to extend from a side wall into the flow path through a venturi throat, therebeing a passage means therethrough communicated with a source of fuel to be vaporized by such a carburetor equipped with a side wall adjacent to the venturi throat of the carburetor;

an enlargement at or near the end of said elongate member and having an encircling portion about a passage which can be positioned in alignment with air in flow through the venturi throat during carburetor operation;

a downwardly facing shoulder in said passage, said shoulder overhanging an opening means communicated with said passage means such that fuel to be vaporized is introduced into said passage sheltered by said shoulder;

a valve in said passage means which includes

a rotatable threaded stem;

a mating threaded receptacle in said elongate member intercepting said passage means;

a seat in said passage means at said receptacle;

a hole in said stem selectively aligned and misaligned with said passage means;

spring means bearing on said stem in a manner resisting unintended rotation thereof; and Where said shoulder is formed by an off center non-concentric arc of a curve in said enlargement which extends at least partly around the passage in said enlargement.

2. The apparatus of claim 1 wherein said opening means includes an opening at a curved surface intermediate between the ends of said shoulder.

3. The apparatus of claim 2 wherein said opening face downwardly and inwardly relative to said passage.

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