April 12, 1966 F. J. MARSEE 3,245,666

CARBURETOR MAIN WELL CONSTRUCTION

Original Filed June 5, 1962

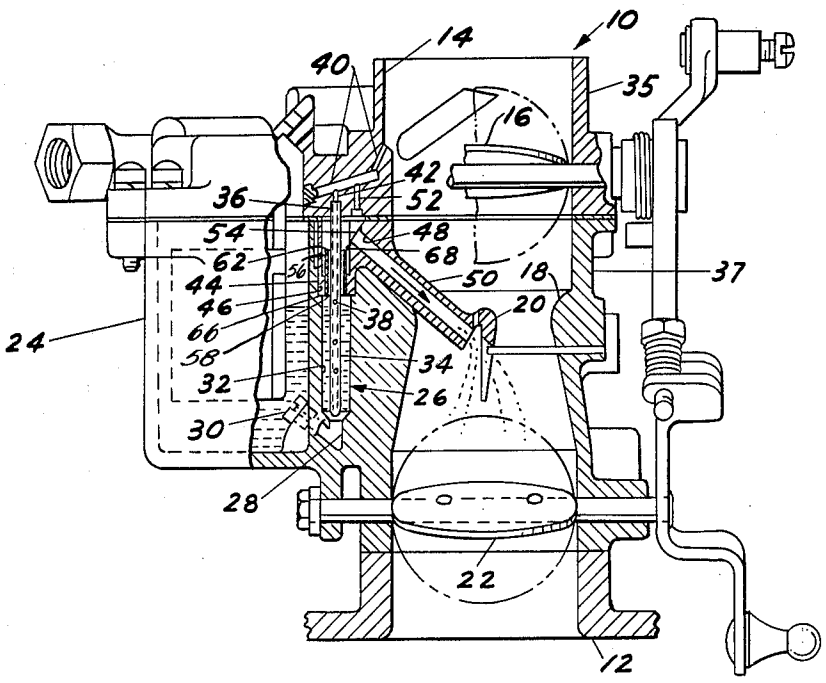


FIG. 1

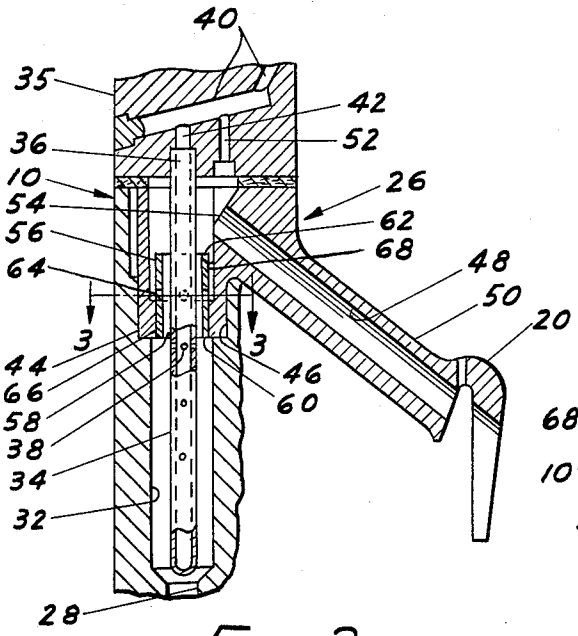


FIG. 2

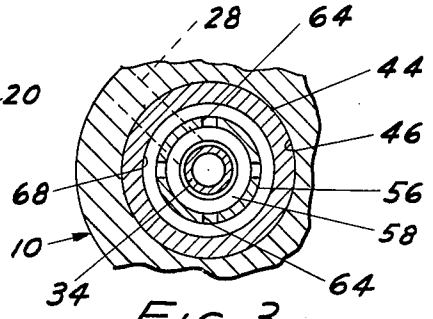


FIG. 3

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United States Patent Office 3,245,666 Patented Apr. 12, 1966

3,245,666

CARBURETOR MAIN WELL CONSTRUCTION

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Continuation of application Ser. No. 200,203, June 5, 1962. This application Dec. 14, 1964, Ser. No. 421,143
4 Claims. (Cl. 261—65)

This is a continuation of application Serial No. 200,203, filed June 5, 1962 in the name of Frederick J. Marsee, and now abandoned.

This invention relates generally to main fuel metering systems for internal combustion engine carburetors, and more particularly to a novel means for preventing percolating fuel from spilling through the main nozzle and into the induction passage.

As is well known in the art, carburetor main fuel metering systems are provided for the purpose of introducing sufficient fuel into the air stream passing through the induction passage to provide proper fuel-air ratios for engine operating conditions above idle.

During normal vehicle operation, and particularly during operation in hot weather, fuel in the main well becomes heated to the point that it tends to percolate and discharge through the main nozzle, particularly after the engine has been shut down. This accumulation of fuel in the induction passage results in an overly rich mixture and causes difficulty during the subsequent starting operation.

Accordingly, it is a general object of the invention to provide means for preventing percolated fuel from entering the induction passage.

A specific object of the invention is to provide a perforated tubular standpipe positioned in the main well just prior to the point of intersection of the main well and the passage through the main nozzle to first disperse percolated fuel before it can spill over the top of the standpipe and second to cause any fuel that does spill over the top of the standpipe to be returned to the main well before it can be discharged through the main nozzle.

Other more specific objects and advantages of the invention will become apparent when reference is made to the following description and accompanying illustrations wherein:

FIGURE 1 is an elevational view, with portions thereof cut away and in cross-section, illustrating a carburetor embodying the invention, the carburetor being mounted on the intake manifold of an engine.

FIGURE 2 is an enlarged fragmentary view of that portion of FIGURE 1 embodying the invention;

FIGURE 3 is an enlarged fragmentary end view of the invention taken on the plane of line 3—3 of FIGURE 2 and looking in the direction of the arrows.

Referring to the drawings in greater detail, FIGURE 1 illustrates generally a carburetor **10** mounted on an intake manifold **12**. The carburetor **10** comprises an induction passage **14** having the usual choke plate **16**, venturi **18**, main fuel nozzle **20**, and throttle plate **22** therein. A fuel reservoir **24** is generally formed as an integral part of the carburetor body **10**, and associated therewith is a main metering system **26**. A conduit **28** containing a main metering jet **30** communicates between the fuel reservoir **24** and the main well **32** of the main metering system **26**.

A main well tube **34** is pressed into the cover portion **35** of the carburetor body **10**, as at **36**, and is suspended into the main well **32**. The main well tube **34** contains one or more bleed passages **38** through its wall so as to communicate with the main well chamber **32**. A conduit **40** communicates between the open top **42** of the main well tube **34** and the induction passage **14**.

The main nozzle **20** may be associated with the main metering system **26** by virtue of having its tubular inlet end **44** press fitted into the main portion **37** of the carburetor body **10** as at **46**, so as to surround the main well tube **34**. A discharge passage **48** through the stem **50** of the main nozzle **20** communicates between the main well **32** and the induction passage **14**. An anti-siphon bleed **52** communicates between the uppermost end **54** of the discharge passage **48** and the conduit **40** leading to the induction passage **14**.

As is better illustrated in FIGURE 2, a cylindrical standpipe **56** is press fitted into the inlet end **44** of the main nozzle **20** such that it surrounds the main well tube **34** and provides a clearance **58** therebetween.

The standpipe **56** comprises a cylinder of any suitable material and of such a length that its lower end is flush with the inlet end **44** of the main nozzle **20** and its uppermost end **62** is substantially below the inlet end **54** of the discharge passage **48**. The standpipe **56** can be seen, in FIGURES 2 and 3, to contain one or more holes **64** through the walls thereof. These holes **64** are located in that portion of the standpipe **56** which extends above the press fit surface **66** into a counterbored clearance **68** in the main nozzle inlet end **44**. In those carburetor models which do not contain a main nozzle of the type shown, the standpipe **56** could be press fitted into the wall forming the main well chamber **32**, provided that the upper end of the main well **32** were bored out so as to provide a clearance, similar to the clearance **68**, around the upper portion of the standpipe **56**.

The advantage of having a standpipe **56** contained in the main well system **26** is that any fuel from the lower portion of the main well chamber **32** that is percolated upwardly around the main well tube **34** is permitted to spill out over the top edge of the standpipe **56**, into the clearance **68**, back through the holes **64**, and thence back down into the main well **32**. This prevents the percolated fuel from reaching the inlet end **54** of the main nozzle discharge passage **48**.

However, in addition to allowing any spilled fuel to return to the main well **32**, the holes **64** permit the fuel vapors causing the percolation to escape or be dispersed into the clearance **68**, thus serving to substantially decrease the intensity of the peroclation and reduce the amount of fuel spillage.

In summary, it can be seen that the invention provides novel means for preventing percolated fuel from being spilled out into the induction passage of the carburetor after an engine has been shut down, thereby permitting the engine to be properly restarted.

Although but one embodiment of the invention has been shown and described, it is apparent that other modifications of the invention may be made without exceeding the scope of the appended claims.

What I claim as my invention:

1. In an internal combustion engine carburetion system wherein the heat from the engine tends to at times percolate the fuel in the carburetor, said carburetor having an induction passage, a throttle plate in said induction passage, a main well chamber and a fuel reservoir, a main metering system, said system comprising a main well formed by said main well chamber, a first conduit leading from said fuel reservoir to said main well, a metering jet in said conduit, an air-bleed well tube suspended from the upper portion of said carburetor into said main well, a main fuel nozzle, a passage communicating between said nozzle and said main well, a second conduit communicating between said well tube and said induction passage, and a perforated tubular member, said tubular member being tightly confined around its entire lower outer surface in the main well below the point of intersection of the said main well and said main

fuel nozzle providing an inner clearance between said well tube and said member and an outer clearance between the upper unconfined portion of the outer surface of said member and said main well for preventing percolating fuel from spilling through said main fuel nozzle and into said induction passage, the perforated portion of said tubular member being the only communication between said outer clearance and said main well.

2. In an internal combustion engine carburetor wherein the fuel is subject to percolation due to heat from the engine, an induction passage, a main discharge nozzle in said induction passage, a fuel reservoir, a passageway leading from said reservoir to said main nozzle, a stepped main well formed in said passageway, an air-bleed well tube suspended into said main well, and a cylindrical member having its entire lower outer surface press-fitted into the smallest internal diameter of said stepped main well so as to provide a first clearance around said well tube and a second clearance around the upper portion of said tubular member, said tubular member having at least one perforation formed through the wall thereof communicating between said first and second clearances.

3. In an internal combustion engine carburetor wherein the fuel is subject to percolation due to heat from the engine, an induction passage, a main discharge nozzle in said induction passage, a fuel reservoir, a passageway leading from said reservoir to said main nozzle, a main well formed in said passageway, an air-bleed well tube suspended into said main well, a tubular member located in said main well between said well tube and the walls of said main well providing a full length inner clearance between said well tube and said tubular member and an outer clearance around the upper portion only of said tubular member between said tubular member and the walls of said main well, an internal flange formed in said main well, said flange having an inside diameter substantially the same as the outside diameter of said tubular member, and being located adjacent the lower end of said tubular member, a port formed in said tubular member communicating between said clearances, said port permitting vapor to escape from said inner clearance to said outer clearance during periods of mild percolation and

serving to permit fuel which has spilled over the top of said tubular member into said outer clearance to return through said port to said inner clearance and thence to said main well during periods of violent percolation.

4. In an internal combustion engine carburetor wherein the fuel is subject to percolation due to heat from the engine, an induction passage, a main discharge nozzle in said induction passage, a fuel reservoir, a passageway leading from said reservoir to said main nozzle, an air-bleed well formed in said passageway, a main well tube suspended into said main well, a tubular member located in said main well between said well tube and the walls of said main well providing a full length inner clearance between said well tube and said tubular member and an outer clearance around the upper portion only of said tubular member between said tubular member and the walls of said main well, an internal ring formed in said main well abutting against the lower outer surface of said tubular member, a plurality of ports formed in said tubular member communicating between said clearances, said plurality of ports permitting vapor to escape from said inner clearance to said outer clearance during periods of mild percolation and serving to permit fuel which has spilled over the top of said tubular member into said outer clearance to return through said plurality of ports to said inner clearance and thence to said main well during periods of violent percolation.

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