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CARBURETOR

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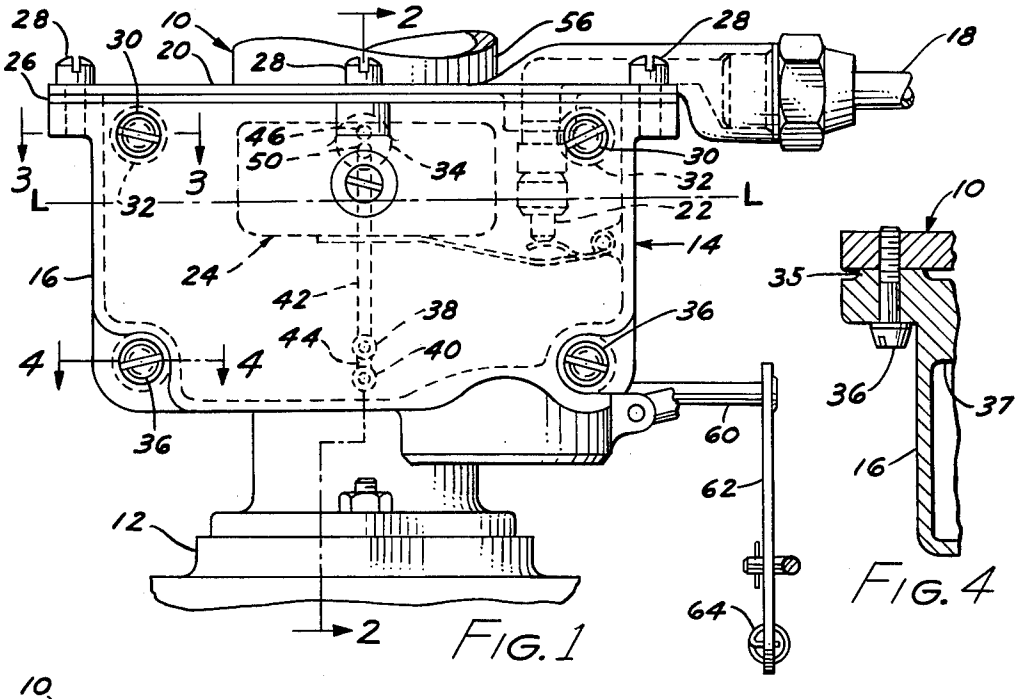


FIG. 1

FIG. 4

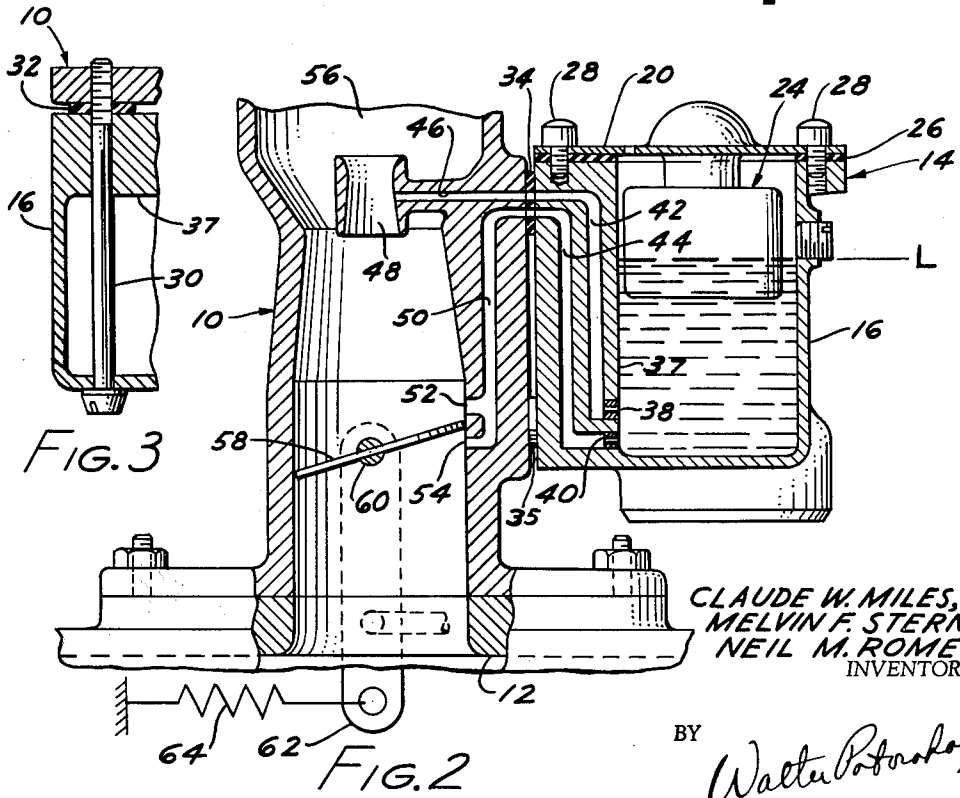


FIG. 3

FIG. 2

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CARBURETOR

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This invention relates to fuel systems for internal combustion engines, and more particularly to a carburetor having a separately attached fuel bowl.

Most carburetors of present design include either an integral fuel metering system and fuel bowl or a separate fuel bowl which is attached to the carburetor body, either directly or with a fuel metering body and a gasket seal therebetween. The area enclosed by this seal has conventionally been the same as the cross-sectional area of the separately attached fuel bowl.

While these prior art constructions have been generally acceptable, they have certain inherent characteristics that sometimes cause undesirable results. Two of these results are (*a*) heat transfer from the throttle body section to the fuel bowl and to the metering section and (*b*) the possibility of fuel leakage due to the deterioration of the gaskets.

This invention is directly concerned with the above problems and has as its main objects the elimination of fuel leakage and the provision of a cooling air space between the fuel bowl and the main carburetor body to which it is attached. Since the metering section can also be a part of the proposed new separately attached fuel bowl, heat transfer to the metering section may likewise be reduced.

In the particular embodiment of the invention disclosed herein, the fuel leakage is eliminated by locating all gasket seals between the carburetor and the separate fuel bowl well above the normal fuel level in the bowl. Further, these seals are small in size and easy to install, service and inspect.

A further object of this invention is to provide a fuel bowl construction that is simple and easy to manufacture and which will provide both a complete fuel metering system and a separate fuel bowl. That is, the fuel metering system may be an integral part of the fuel bowl, or it may be a separate body which is inserted into the fuel bowl and fastened therein by any suitable means. The invention is also applicable to a carburetor which includes an integral metering unit; in that case, the separate fuel bowl would be provided without a fuel metering system.

Further objects and advantages of the invention will become more apparent when reference is made to the following description and the accompanying drawings, wherein:

FIGURE 1 is a side elevational view of a carburetor embodying the invention;

FIGURE 2 is a cross-sectional view taken on the plane of line 2—2 of FIGURE 1 and looking in the direction of the arrows;

FIGURE 3 is a partial cross-sectional view taken on the plane of line 3—3 of FIGURE 1 and looking in the direction of the arrows;

FIGURE 4 is a partial cross-sectional view taken on the plane of line 4—4 of FIGURE 1 and looking in the direction of the arrows.

Referring to the drawings in greater detail, FIGURES 1 and 2 illustrate a carburetor assembly **10** mounted on the engine manifold **12**. The fuel is forced into carburetor assembly **10** by the difference in pressure between manifold vacuum and/or venturi vacuum in the carburetor induction passage and substantially atmospheric pressure above the fuel in the fuel bowl assembly **14**. At idle

or off idle operation, the fuel flows through jet **40**, conduit **50** and finally through discharge port **54** and/or idle transfer port **52**. The main fuel at higher speeds flows through jet **38**, conduit **46** and main discharge nozzle **48**. The transition from manifold to venturi vacuum operation occurs as more air flows through air passage **56** when throttle valve **58** pivoted on shaft **60** is progressively opened by manual movement of throttle control lever **62** against the force of spring **64** which tends to hold throttle valve **58** closed. The above described structure and operation is, of course, well known in the art.

FIGURES 1 and 2 also illustrate a fuel bowl assembly **14** having a main body **16** and a cover **20** fastened thereto by means of cover screws **28**, with cover gasket **26** therebetween. As stated above, the fuel enters carburetor assembly **10** through jets **38** and **40** located in metering section **37** of main body **16**. The fuel bowl **14** also contains the usual float assembly **24** which rises or lowers with the fuel level in the float chamber, thus controlling the inlet fuel valve **22** to admit only enough fuel through the inlet fuel conduit **18** from the fuel pump to replace that being used.

The above general operation is typical of most present day carburetor systems. The invention now to be described comprises the fuel bowl assembly **14** and the manner in which it is attached to the carburetor assembly **10**. It will be noted that gaskets **32**, gasket **34** and bosses **35** on the lower side of fuel bowl main body **16** are located between the carburetor and fuel bowl assemblies. The thicknesses of the above components result in an air space between the fuel bowl assembly **14** and the carburetor assembly **10** when the latter are fastened together by any suitable means such as upper mounting screws **30** and lower mounting screws **36**, as shown in FIGURES 3 and 4.

In prior carburetor constructions there was no air space between the fuel bowl and the carburetor body. That is, the fuel bowl was either integral with the carburetor body or, in the case of a separately-attached fuel bowl, the gasket had an area equal to the area of an entire side of the fuel bowl. In the case of the integral fuel bowl, heat was conducted through the carburetor and to the fuel bowl; this heat often resulted in vaporization of the fuel in the bowl, thereby causing a variety of problems such as fuel spilling out of the fuel bowl and onto the engine, excessive pressures above the fuel in the bowl, etc. Where a separate fuel bowl was attached with a large gasket, there was gasket area below the fuel level, and any deterioration of the gasket would result in leakage of the fuel from the bowl and onto the engine.

With the construction contemplated by this invention, the above problems are virtually eliminated. It will be noted that the fuel bowl fastening bolts **36** are short bolts that do not pass through the fuel chamber but through a flange on the bowl, as shown in FIGURE 4. It is more likely, as shown in FIGURES 1 and 3, that the longer top fastening bolts **30** do pass through the fuel chamber. However, in this case, the sealing gaskets **32** and gaskets at the heads of the bolts **30**, if they are provided, are disposed well above the normal fuel level L so that no substantial leakage can take place even if the gaskets should deteriorate. The sealing gasket **34** having openings aligned with the passages **40** and **42** in the bowl metering section and the main and idle fuel passages **46** and **50**, respectively, in the carburetor body is also located well above the fuel level and presents a minimum area for leakage, as compared to present constructions. Other fuel passages, such as a pump discharge passage, could also be located above the fuel level. As already stated, the thickness of the gaskets **32** and **34** and the bosses **35** provide an insulating air space between the carburetor body and the fuel bowl so that engine heat cannot be conducted

through the carburetor and into the bowl to vaporize the fuel.

Although but one embodiment of the invention has been shown and described, it is apparent that other modifications may be made within the scope of the appended claims.

What we claim as our invention is:

1. A carburetor for supplying motive fluid to an internal combustion engine, said carburetor comprising a main carburetor body having an air passage with a venturi therein, a throttle plate positioned below said venturi, idle and main fuel passages extending from one outer surface of said carburetor body to idle and main fuel discharge ports, respectively, located in said air passage, a separate fuel reservoir having idle and main fuel passages supplied through jets located near the bottom of said reservoir and extending upwardly and outwardly to an outer surface of said fuel reservoir so as to be alignable with said passages in said carburetor body, a pair of bosses formed on said outer surface of said fuel reservoir having said passages, and means for securing said fuel reservoir to said carburetor body with said passages in alignment, said means being disposed above the normal fuel level in said fuel reservoir and including sealing elements having substantially the same thickness as said bosses so as to maintain an air space between said carburetor body and said fuel reservoir after assembly thereof.

2. A carburetor for supplying motive fluid to an internal combustion engine, said carburetor comprising a main carburetor body having an air passage with a venturi therein, a throttle plate positioned below said venturi, idle and main fuel passages extending from one outer surface

of said carburetor body to idle and main fuel discharge ports, respectively, located in said air passage, a separate fuel reservoir having idle and main fuel passages supplied through jets located near the bottom of said reservoir and extending upwardly and outwardly to an outer surface of said fuel reservoir so as to be alignable with said passages in said carburetor body, at least one boss extending between said outer surfaces of said fuel reservoir and said carburetor body at a point below the normal fuel level in said reservoir, and means for securing said fuel reservoir to said carburetor body with said passages in alignment, said means being disposed above said normal fuel level in said fuel reservoir and including sealing elements having substantially the same thickness as said boss so as to maintain an air space between said carburetor body and said fuel reservoir after assembly thereof.

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