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CARBURETOR FUEL BOWL INLET CONTROL

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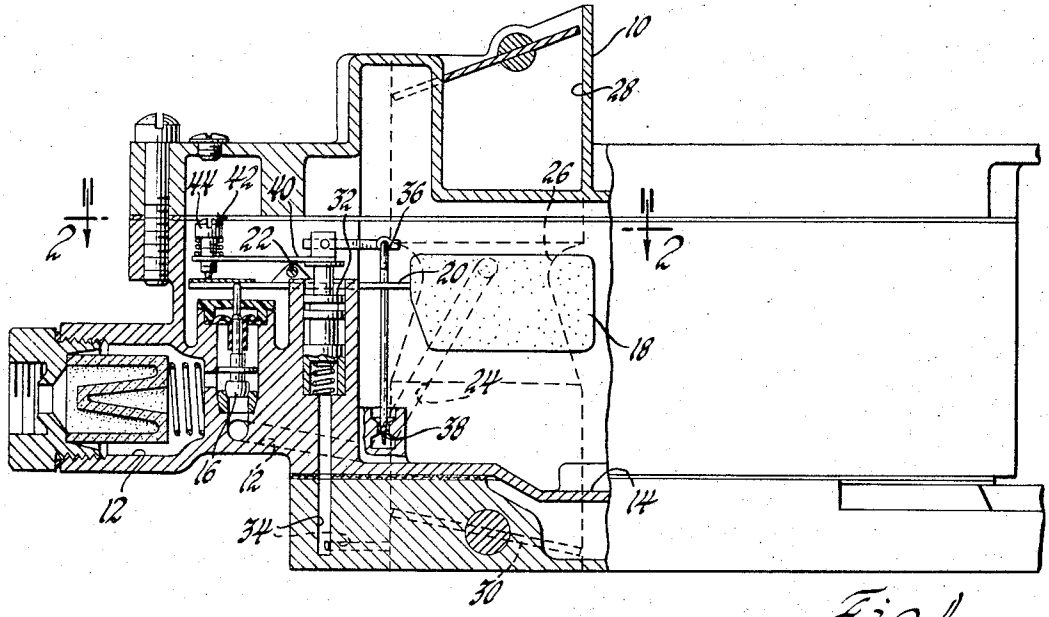


Fig. 1

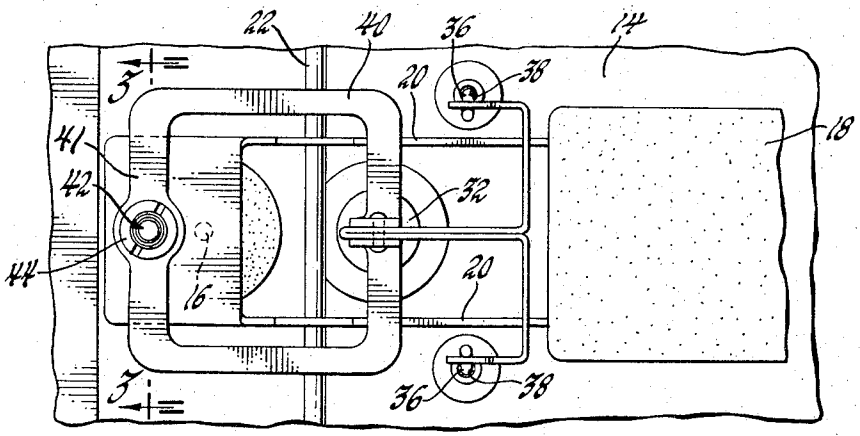


Fig. 2

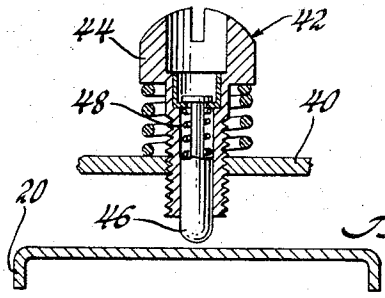


Fig. 3

INVENTOR.
Richard J. Brunner
BY
J. L. Carpenter
ATTORNEY

United States Patent Office

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CARBURETOR FUEL BOWL INLET CONTROL

Richard J. Brunner, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

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ABSTRACT OF THE DISCLOSURE

A manifold vacuum responsive piston positions carburetor metering rods for economy and power mixture ratios and positions a stop controlling movement of the fuel bowl float and the fuel bowl inlet valve. At high vacuums the stop permits unrestricted initial inlet valve opening and restricted further valve opening and prevents valve opening beyond a predetermined amount; at low vacuums the stop is positioned to permit unrestricted valve opening.

In starting an automotive engine after a hot soak period, in which the engine fuel system has been exposed to high temperatures, the fuel pump tends to deliver a mixture of hot fuel and fuel vapor at high pressure to the carburetor. When this mixture enters the carburetor and experiences the pressure drop between fuel pump pressure and the atmospheric pressure of the carburetor fuel bowl, it immediately expands. Upon such expansion, an emulsion of fuel and vapor is forced both through the internal vents of the carburetor into the mixture conduit and through the external vents into the atmosphere. Each is undesirable, because the fuel forced into the mixture conduit floods the engine causing a stall and because the fuel forced through the external vents increases the concentration of unburned hydrocarbons in the atmosphere.

This invention provides means to resist opening of the fuel bowl inlet valve by the high pressure of the hot fuel and vapor so that only the required amount of fuel is delivered to the fuel bowl. Thus flooding of the engine is avoided, and in addition, the amount of vapor emitted to the atmosphere is reduced.

The details as well as other objects and advantages of this invention are disclosed in the following description and in the drawings in which:

FIGURE 1 is a side elevational view of a carburetor shown partially in section to illustrate this invention;

FIGURE 2 is an enlarged view taken generally along line 2—2 of FIGURE 1 illustrating the bracket and modulated stop which limit opening of the fuel bowl inlet valve; and

FIGURE 3 is a further enlarged sectional view along line 3—3 of FIGURE 2 illustrating the details of the modulated stop.

Referring first to FIGURE 1, fuel is delivered to the carburetor **10** through a fuel inlet passage **12** opening into a fuel bowl **14** past an inlet valve **16**. A float **18** is supported on an arm **20** pivoted on a pin **22** to control the opening movement of valve **16**. As the fuel level in bowl **14** drops, float **18** and arm **20** pivot in a clockwise direction about pin **22** to permit the inlet valve **16** to open and allow fuel flow through inlet passage **12**.

A fuel delivery passage **24** extends from fuel bowl **14** to a venturi **26** disposed in a mixture conduit **28**. A throttle **30** controls flow through mixture conduit **28**.

A piston **32** is subjected through a passage **34** to the vacuum in mixture conduit **28** downstream of throttle **30**. Piston **32** positions a metering rod **36** within a metering orifice **38** so that during low manifold vacuum, metering rod **36** is withdrawn from orifice **38** to permit an enriched mixture for power operation of the engine.

A bracket **40** having an extension **41** is secured to piston **32** and overlies float arm **20**. A modulated stop **42** is mounted on bracket extension **41** and contacts float arm **20**. As shown in greater detail in FIGURE 3, modulated stop **42** includes an adjustable support **44** and a contact member **46** biased by a spring **48**.

When the throttle is closed or nearly closed and the engine speed is low, piston **32** is pulled downwardly by the vacuum in mixture conduit **28** to position modulated stop **42** closely adjacent float arm **20**. A small clearance is left so that float arm **20** may allow inlet valve **16** to open an initial amount sufficient to supply the fuel required for low speed operation.

If the carburetor has been subjected to an extended hot soak so that a substantial amount of fuel has evaporated from the fuel bowl, the float will attempt to drop further to allow the inlet valve to replace the evaporated fuel. Such secondary movement of the inlet valve **16** is resisted by the spring **48** so that a modulated secondary opening movement of the inlet valve **16** is permitted. Thus the fuel flow through inlet **12** is restricted so that a substantial amount of fuel is not immediately vaporized as it enters the fuel bowl.

When the throttle **30** is opened and the engine demand for fuel is greater, piston **32** is raised and positions modulated stop **42** to permit unrestricted opening movement of inlet valve **16**. Thus this control prevents undue vaporization of fuel in a carburetor without interfering with engine operation.

I claim:

1. An internal combustion engine carburetor comprising a mixture conduit, a throttle disposed in said mixture conduit, a fuel bowl, a fuel passage extending from said bowl to said mixture conduit, said fuel bowl having an inlet, a valve controlling flow through said inlet, a float responsive to the fuel level in said bowl, a pivoted arm extending from said float to said valve to position said valve in accordance with the fuel level in said bowl, said float and arm permitting said valve to open as the fuel level decreases, a piston responsive to the pressure in said mixture conduit downstream of said throttle, a bracket secured to said piston and having an extension adjacent said arm, and a modulated stop including an adjustable support mounted on said bracket extension and a spring biased contact member supported thereby for contact with said arm, said piston positioning said bracket and stop at relatively low pressures in said mixture conduit whereby said contact member will permit unrestricted initial valve opening and restricted further valve opening and will prevent valve movement beyond a predetermined opening, said piston positioning said bracket and stop at relatively high pressures in said mixture conduit whereby said contact member will permit unrestricted valve opening.

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RONALD R. WEAVER, *Primary Examiner.*

HARRY B. THORNTON, *Examiner.*