Jan. 31, 1967 B. WALKER 3,301,540

EXTERIOR CONTROL OF THE POWER VALVE OF A CARBURETOR

Filed Sept. 28, 1965

Fig. 1.

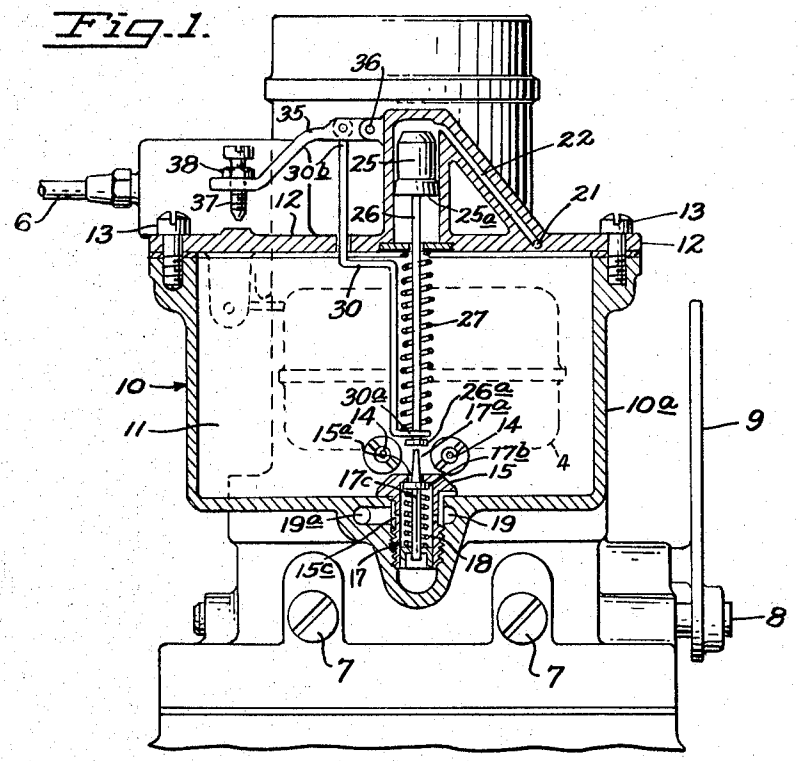
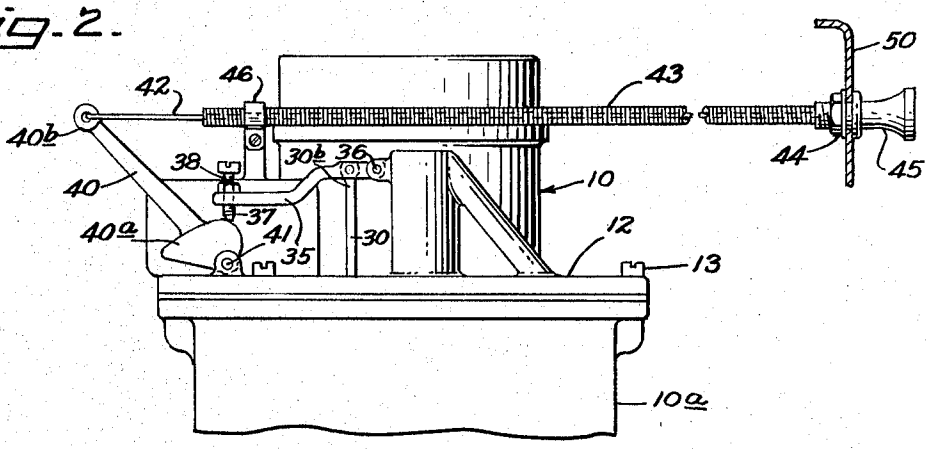


Fig. 2.



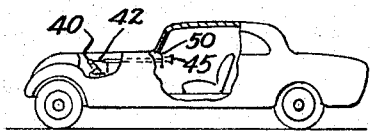


Fig. 3.

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EXTERIOR CONTROL OF THE POWER VALVE OF A CARBURETOR

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4 Claims. (Cl. 261—69)

This application is a continuation-in-part of my prior filed application Serial No. 184,018, filed April 2, 1962, now abandoned.

This invention relates to an exterior control of the power valve of a carburetor.

In accordance with the prior art the carburetor had to be partially dismantled to alter or disengage the power valve in the carburetor. This led to a great deal of time-consuming and difficult work.

In accordance with this invention the problems of the prior art are overcome by providing an exterior adjustment of a vacuum (suction from engine manifold) operated power valve as well as a manual control from the driver's compartment to render said power valve operative or inoperative as well as adjusting the flow of fuel through the power valve.

Other features will be more particularly pointed out in the accompanying specification and claims.

I have illustrated my invention by way of example in the accompanying drawings, in which:

FIG. 1 is a side elevation of a carburetor partly cut away showing one form of the invention;

FIG. 2 is a side elevation of a portion of a carburetor showing another form of the invention; and

FIG. 3 is a reduced scale side elevation of a vehicle partly cut away showing the installation of this invention.

In all figures like numerals refer to corresponding parts.

In FIG. 1 I have shown a carburetor **10** having a float bowl **10***a* forming a chamber **11** for the fuel and float **4**. A fuel feed line **6** feeds fuel under pressure to the float bowl in the usual manner. The carburetor has the usual throttle shaft **8** and throttle control arm **9** and may have a fast idle when choked and accelerator pump connections (not shown) if desired; however, this invention is concerned mainly with exterior adjustments and remote controls for the power valve.

A float bowl cover **12** is secured to the bowl body **10***a* by screws **13**. Idle adjustment screws **7** control the idle fuel in the usual manner. A power valve **17** is held in its closed position as shown in FIG. 1 with the shoulder thereof on the upper face of the flange **17***b* of valve **17** seating on the inside face of fitting **15**. Orifice **15***a* is partially closed by taper end **17***a* of power valve stem **17***c* so that the farther taper stem **17***a* is forced down by vacuum controlled stem **26** and end **26***a* the more fuel will pass orifice **15***a* and the smaller diameter of the upper portion of taper stem **17***a*.

Ordinarily a vacuum piston **25** which may have a seal **25***a* is connected by passages **22** and **21** to a passage leading below the butterfly on throttle shaft **8** as generally described in Glen's Auto Repair Manual, copyright 1962, published by Chilton Co., Library of Congress Card 62–7749, pages 232–236. The conventional construction does not involve a tapered end **17***a* on power valve stem.

Since the piston **25** and associated rod **26** are normally held up by the suction (over 10" Hg) which overcomes the force of spring **27**, the spring **18** seats the flange **17***b* on its seat to shut off the power valve **17**. When the vacuum drops below a predetermined value (about 10" Hg), spring **27** forces piston **25** and rod **26** and end **26***a* down and, in the prior art, would fully open normally straight valve **17***a* so fuel could flow past orifice **15***a* through holes **15***c* to passages **19** and **19***a* to the main jets to enrich them over the flow from the manual main jets **14**, generally described in said Glen's Auto Repair Manual (1962 edition).

In my construction, rod **30** includes an end portion or abutment **30***a* positioned between the lowermost coil of the spring **27** and the end **26***a* of the rod **26**, the end portion **30***a* permanently engaging the lowermost coil of the spring **27** and moving said lowermost coil upwardly along the rod **26** when the rod **30** is moved upwardly. The end portion **30***a* includes a looped portion which surrounds the rod **26** and is slidably engaged therewith.

Rod **30** extends through cover **12** with upper end **30***b* thereof pivotally secured to arm **35**. Arm **35** is pivoted to cover **12** by pin **36** and carries adjustment screw **37** and lock nut **38**.

Adjustment of the screw member **37** limits the movement of the arm **35**, thereby limiting the movement of the rod **30**. This limitation on the movement of rod **30** limits the biasing action and downward travel limit of the spring **27** and thereby the position of piston **25**.

The power valve **17** includes a biasing spring **18** which normally biases the valve **17** to the off or closed position. The valve **17** also includes a tapered power valve stem **17***a* whereby the position of the stem **17***a* in the opening **15***a* of the fitting **15** will control the amount of fuel passing through said opening.

The piston **25** is normally under an upward force sufficient to overcome the downward force of the spring **27** on the rod **26** and rod end **26***a*. When the vacuum decreases, the piston **25** moves downwardly due to the inability thereof to overcome the downward force produced by spring **27** until the upward and downward forces balance.

By adjusting screw **37** the maximum downward movement of spring **27** and therefore piston **25** and rod **26** is controlled to control the maximum downward movement of the valve stem **17***a* caused thereby. In this manner the extent of opening of tapered valve stem **17***a* is controlled from outside the carburetor and an exterior adjustment of the power valve is provided. Such adjustment can also control the amount of opening of shoulder **71***b* from the seat inside fitting **15** as an exterior fine or micro adjustment of flow of fuel past the power valve assembly.

In the event an adjustment from the inside of the car to which the carburetor is attached is necessary such as eliminating the power valve for restricted driving in a city and then being able to cut it in for passing on a mountain grade where there is room to pass, I have provided in FIG. 2 a control knob **45** accessible from the driver's compartment back of the instrument panel **50**. Knob **45** is secured to Bowden wire **42** in flexible conduit **43** and provides a remote operation of lever **40** by connection to end **40***b* of lever **40**. Flexible conduit **43** is secured to the instrument panel by nut **44** and by a support **46** at or near the carburetor. Lever **40** is pivoted to the carburetor float bowl cover **12** by pin **41**. The lower end of lever **40** carries cam **40***a* which rides against adjustment screw **37** to control rod **30** and the amount of opening or inoperativeness of power valve stem **17***a* and associated parts can be controlled from the vicinity of the instrument panel.

I have illustrated my invention in these various forms; however, many other variations may be possible within the scope of this invention.

To those skilled in the art to which this invention relates many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention The disclosures and description herein are purely illustrative and are not intended to be in any sense limiting.

I claim:

1. A carburetor comprising a float bowl, a throttle valve, an induction passage for air and fuel, a main fuel passage for conducting fuel from said bowl to said induction passage, an auxiliary fuel passage for conducting fuel from said bowl into said main passage, a valve in said bowl for controlling the flow of fuel through said auxiliary passage, and means for regulating the position of said valve, said regulating means comprising means biasing the valve to closed position, means acting against the said biasing means for biasing the valve to a maximum open position, and vacuum responsive means for adjusting the bias of said second mentioned biasing means whereby to adjust the opening of the valve in proportion to the degree of vacuum; said valve comprising an orifice, a tapered pin, and means mounting said pin for reciprocating movement in the orifice; said second mentioned biasing means comprising a contact for abutting engagement with said tapered pin and a spring for urging said contact toward said abutting engagement, and means for selectively adjusting said maximum open position, said adjusting means comprising an abutment in engagement with the spring of said second mentioned biasing means and means on the bowl for adjusting the position of the abutment relative to the closed position independently of the contact.

2. A device as defined in claim 1 wherein the adjusting means for the abutment comprises a lever pivotally attached to the float bowl at one end thereof, an adjustable abutment screw mounted in the other end of the lever for adjustable contact with the bowl, and a rod pivotally mounted on the lever between the ends thereof and carrying said abutment.

3. A device as defined in claim 1 wherein the adjusting means for the abutment comprises a first lever pivotally attached to the float bowl at one end thereof and an adjustable abutment screw mounted in the other end, a second lever pivotally mounted on the float bowl, a cam carried by said second lever in engagement with said screw, and means for pivoting said second lever and therewith the cam for adjusting the position of the abutment relative to the valve.

4. A device as defined in claim 3 further including means for pivoting the lever from a position remote from the carburetor.

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