

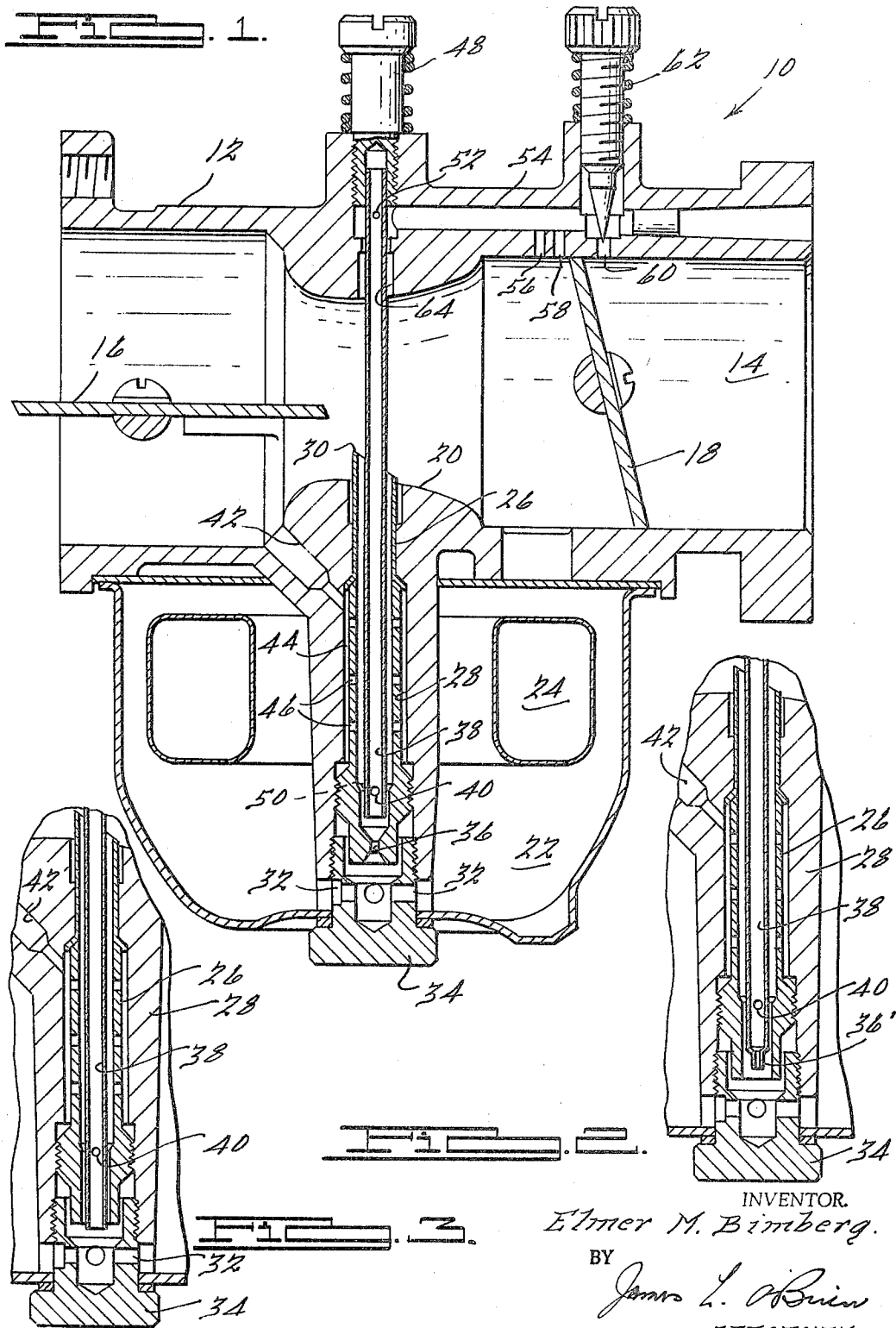
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CARBURETOR

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3,288,446

CARBURETOR

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The present invention relates generally to carburetors and more particularly to a metering system for carburetors which permits the main metering system to be regulated without affecting the idle metering system.

In the past, carburetors provided with a main metering adjustment valve such as shown in my U.S. Patent No. 2,656,165 were arranged such that adjustment of the main metering valve affected the fuel flow through the idle system. In the prior art carburetors of this type whenever the main metering system was adjusted, the idle system generally required readjustment. The influence of the main metering adjustment on the idle system is more pronounced in carburetors used on smaller engines where the idle system capacity is relatively high in comparison with the capacity of the main metering system.

It is an object of the present invention to provide a carburetor in which the main metering system may be regulated independently of the idle and which is simple in construction and relatively inexpensive to manufacture.

It is another object of the present invention to provide in a carburetor a metering system which facilitates acceleration fuel flow in a carburetor not having a separate acceleration system and is particularly useful in carburetors for use with relatively small engines.

These and other objects and advantages of the present invention will become readily apparent from the following detailed description taken in connection with the appended drawings in which:

FIGURE 1 is a sectional view of a carburetor embodying the present invention;

FIGURE 2 is a fragmentary view of a portion of FIGURE 1 showing another embodiment of the invention; and

FIGURE 3 is a fragmentary view similar to FIGURE 2 showing still another embodiment of the invention.

Referring now to the drawings and more particularly to FIGURE 1, numeral 10 designates a carburetor having a body 12 with an induction passage 14 therethrough containing a choke valve 16 and throttle valve 18 mounted therein on opposite sides of an air nozzle 20. A fuel bowl 22 is secured to body 12 by suitable means (not shown) and contains an annular float 24 which controls the level of fuel in bowl 22 by regulating suitable valve means (not shown). A main fuel discharge jet 26 is mounted in fuel well 28 with its discharge end 30 disposed to discharge fuel into the throat of air nozzle or venturi 20. Fuel is supplied to main jet 26 from bowl 22 via passages 32 in nut 34, fixed restriction 36, idle tube 38, and port 40 in tube 38. Air from induction passage 14 is brought through air bleed passage 42 to passage 44 between jet 26 and well 28 and through perforations 46 to form a fuel-air emulsion in main jet 26 prior to discharge from end 30.

Idle tube 38 is preferably coaxial with main jet 26 and extends transverse the induction passage 14 into the side wall of the carburetor body 12 where it is secured to adjustable nut 48 threadedly mounted in body 12. It is to be understood, however, that the idle tube 38 may be located outside the main jet 26. Rotation of adjustable nut 48 moves idle tube 38 axially in main jet 26 to bring port 40 into variable registration with a wall 50 formed in main jet 26. The port 40 constitutes the main

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metering restriction the area of which may be regulated through variable registration with wall 50.

According to one feature of the present invention, idle tube 38 is disposed to be coaxial with the fixed restriction 36 whereby fuel supplied from bowl 22 passes through the fixed restriction 36 and flows in a straight line into idle tube 38. This feature of the invention serves to eliminate or reduce turbulent flow, to reduce line loss and to make fuel readily available for acceleration even when the carburetor is used with small engines in which relatively small forces are available to cause fuel to flow.

Fuel for idling is supplied from fuel bowl 22 through passages 32, fixed restriction 36, idle tube 38 to ports 52 hence through idle passage 54 for ultimate discharge through one or more of idle discharge ports 56, 58 and 60, the latter being provided with an adjustable needle valve 62. An idle air bleed is provided at 64.

As can be readily seen, the idling fuel does not pass through the main metering restriction 40 and thus the regulation of the area of main restriction 40 has no effect on the fuel discharged through the idle system.

The fixed restriction 36 in the embodiment shown in FIGURE 1 is common to both the main fuel system and the idle fuel system and is useful in some applications in limiting the amount of fuel discharged through the idle system and assisting in the smooth transition from idle system to main system.

In the embodiment shown in FIGURE 2 parts similar to the parts of FIGURE 1 are designated by similar numerals and no further description will be made of them. In this embodiment, the fixed restriction 36 has been eliminated from the main fuel jet 26 and instead the end of idle tube 38 has been formed with fixed restriction 36' whose function is the same as the fixed restriction 36 in FIGURE 1.

In the embodiment shown in FIGURE 3 the fixed restriction has been eliminated entirely and is not present either in the main metering jet or in the idle tube. This embodiment is particularly useful in those applications where strong idling is desirable and in which the transition from idle to the main metering system is accomplished without apparent difficulty.

In the embodiments shown, the main metering restriction may be conveniently regulated without affecting the idle system in a very simple manner without adding substantially to the cost of the carburetor and indeed in such a way as to eliminate a source of leaks which existed in the main metering valve in the prior art carburetors such as shown in the aforementioned U.S. Patent No. 2,656,165.

Although the present invention has been described with reference to specific embodiments it will be readily apparent to one skilled in the art that various changes and modifications can be made without departing from the spirit of the invention.

I claim:

1. In a carburetor having an induction passage and a fuel bowl, a main jet mounted to discharge into said induction passage, an idle fuel tube, passage means connecting said tube to said fuel bowl, flow control means regulated by the position of said tube for controlling the flow of fuel from said tube to said main jet, adjustable means connected to said tube for moving said tube to regulate said flow control means, and idle discharge port means connected to said idle tube for discharging fuel into said induction passage.

2. In the carburetor of claim 1, a fixed restriction formed in said passage means.

3. In the carburetor of claim 1, a fixed restriction formed in said idle tube upstream of said flow control means.

4. In a carburetor having an induction passage and a fuel bowl, a main jet mounted to discharge into said in-

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duction passage, an idle fuel tube, passage means connecting said tube to said fuel bowl, fixed restriction means formed in said passage means coaxially with said idle fuel tube, flow control means regulated by the position of said tube for controlling the flow of fuel from said tube to said main jet, adjustable means connected to said tube for moving said tube to regulate said flow control means, and idle discharge port means connected to said idle tube for discharging fuel in said induction passage.

5. In a carburetor having an induction passage and a fuel bowl, a main jet mounted to discharge into said induction passage, an idle fuel tube coaxially disposed in said main jet, passage means connecting said tube to said fuel bowl, flow control means regulated by the position of said tube for controlling the flow of fuel from said

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tube to said main jet, adjustable means connected to said tube for moving said tube to regulate said flow control means, and idle discharge port means connected to said idle tube for discharging fuel into said induction passage.

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