

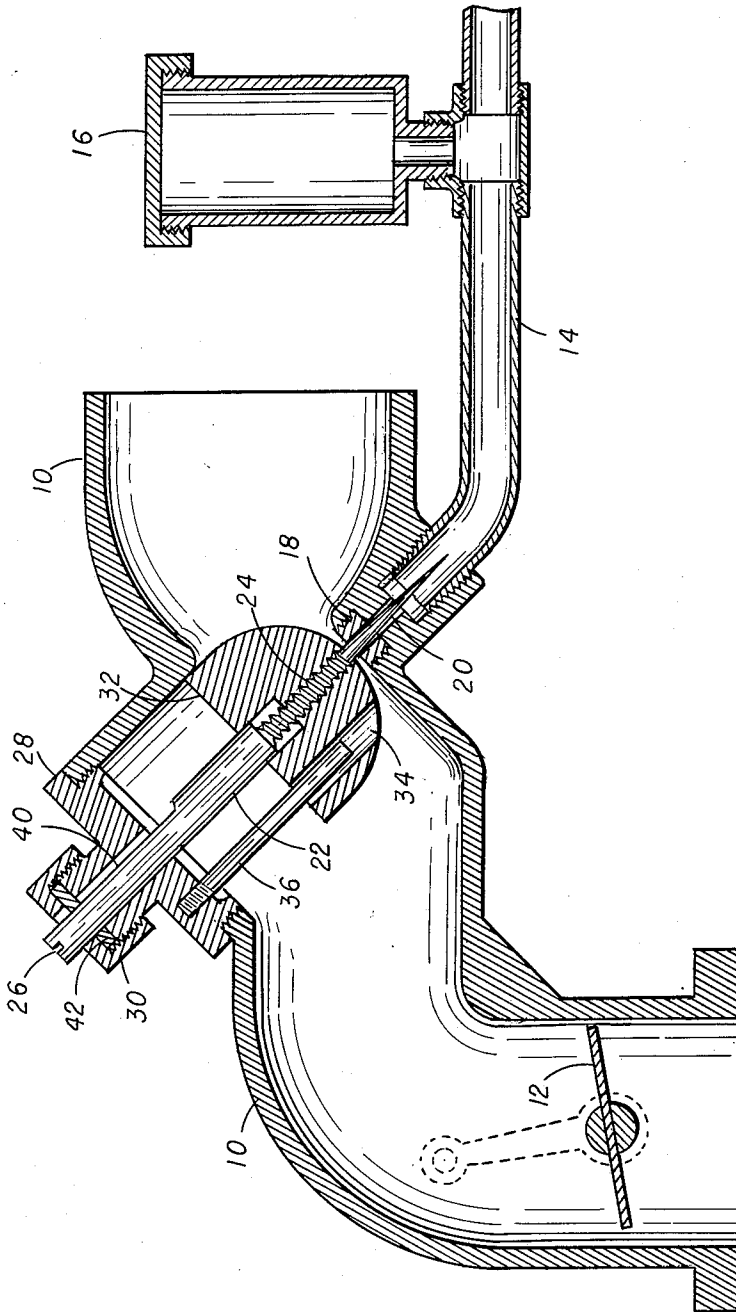
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CARBURETOR

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BY

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1

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CARBURETOR

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2 Claims. (Cl. 261-44)

This invention relates to an improved carburetor and has for one of its principal objects the provision of a device of the class described which will automatically adjust itself so as to produce a proper and desired mixture of air and fuel during the entire cycle of operation of the internal combustion engine to which it is applied.

One of the important objects of this invention is to provide a carburetor which will maintain a uniform ratio between the incoming air and the liquid or vaporized gasoline or other fuel in all throttle positions once it is properly preliminarily adjusted.

Another object is the provision of a carburetor wherein a gravity controlled valve element is provided for the incoming air, said element being adjacent to and directly connected with the needle or other valve of the fuel inlet.

Yet another object of the invention resides in the provision of an improved carburetor for internal combustion engines and the like which is composed of a minimum number of parts, with a very simple idling adjustment which, when once adjusted, can be locked in such position so that the later operation will automatically provide a desired and proper combustible mixture regardless of the speed of operation of the engine.

Other and further important objects of the invention will be apparent from the disclosures in the accompanying drawing and following specification.

The invention, in a preferred form, is illustrated in the drawing and hereinafter more fully described.

In the drawing:

The figure is a vertical sectional view with certain parts shown in full, of the improved carburetor of this invention.

As shown in the drawing:

The reference numeral 10 indicates generally a housing, preferably a casting, which comprises the main body of the improved carburetor of this invention. The usual butterfly throttle valve is positioned in the casing adjacent the outward end. Incoming air enters the other end of the casing 10, this usually being delivered from an air cleaner which is now ordinarily provided in all internal combustion engines, particularly those used in automobiles.

A fuel line 14 is provided, this leading from the fuel tank and pump (not shown) and a pressure equalizing chamber 16 can be included in the fuel line so that pulsations from the pump will not communicate themselves directly to the working parts of the carburetor as such may interfere with this normal operation.

A fuel jet orifice 18 is fitted into the casing 10 adjacent the connection with the fuel line and a needle valve 20 is adapted to operate in this orifice.

The needle valve is either integral with or fitted into a supporting and adjusting rod 22 which is screw-threaded for a portion of its length as shown at 24. A milled slot 26 is provided at the outer end of the rod 22 for adjustment purposes, usually by way of screw-driver.

The upper or outer end of the rod 22 is slidably fitted into a cap 28 which is mounted in an opening in the cas-

2

ing 10, and a retaining cover 30 surmounts the cap 28, being screw-threaded thereonto.

A semi-spherical ball valve 32 is positioned in the casing 10 as shown, the rounded portion being adjacent the fuel jet orifice 18, and this valve element is centrally, internally screw-threaded for the reception of the similarly screw-threaded portion 24 of the rod 22. The relationship between the ball valve 32 and the combined rod and needle valve could therefore be adjusted by turning the rod in the valve with the screw-driver or the like fitted into the slot 26 in its outer end. An opening 34 is formed in the valve 32 and a positioning element 36 is fitted into this opening, the same being fixed at one end into the cap 28 so that the valve element 32 cannot turn when the rod 22 is turned. In this manner, a desired adjusted relationship can be had between the needle valve 20 and its seat, together with the distance relationship between the floating ball valve 32 and the fuel jet orifice 18. This adjustment is preferably made when the engine is idling, and it will be noted that a flat face 40 is milled on to the outer end of the rod 22, and a locking washer 42 having a similarly flattened inner portion is provided inside the cover 30, whereby the rod 22 and the needle valve 20 can be fixed in this adjusted position by tightening of the cover 30. The inlet opening of the casing 10 is shaped so as to provide a Venturi action, and this will take place regardless of the position of the floating ball valve 32. The Venturi action will provide a suction at the fuel jet orifice whereby once the needle valve is properly adjusted, a proportioned amount of fuel will be brought in through the inlet, this varying in accordance with the opening of the ball valve 32, and the corresponding variation in the volume of incoming air to be mixed with the liquid fuel which is thereupon properly vaporized for perfect combustion. The action of the floating ball valve 32 is controlled by incoming air which raises it according to rate of flow.

The body 10 of the carburetor is preferably composed of metal such as brass or aluminum, but can also be made of plastic with little or no variations. The other parts can also be of either metal or plastic and the floating ball valve 32 can be made of some relatively light material if a faster response to throttle action is desired, or can be made of heavier material where a slower response, or more or less of a governing action is desired, as in the case of heavy trucks. The rod 22 with its needle valve 20 and all the appurtenances, including the floating valve 32, are preferably positioned at an angle of approximately 45° to the horizontal when the engine or motor-car to which this device is applied is on normally level ground. This assures of proper gravitational action during a large proportion of operating time, but it has been found by experiment that the carburetor of this invention will perform very satisfactorily even on steep grades which would obviously shift the relative positioning of these operating parts from the preferred 45° angle. Even the steepest grade has little or no effect on the operation, regardless of whether the car is travelling up or down hill.

It will be seen that herein is provided an extremely simple yet most efficient carburetor construction, since all auxiliary jets, air valves, controls and adjustments are dispensed with, while at the same time, a desired and proper ratio between fuel and air is automatically maintained at all times. The determining factor of this ratio is the demand of the engine itself and not the arbitrary adjustment of some part of the carburetor, which, in the hands of an inexperienced person, will many times produce faulty operation and undue and expensive fuel consumption.

This automatic metering of the fuel in response to the volume of air flow will insure that the exact amount of

3

fuel necessary for most efficient operation will always be supplied, and this is further controlled by means of the pressure chamber 16 in the fuel line 14. Therefore from idling speed or very heavy speeds to the maximum of miles per hour, and from level operation to a hard pull on a stiff grade, there is always sufficient power with no excess fuel consumption.

I am aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon otherwise than as necessitated by the prior art.

I claim as my invention:

1. A carburetor for internal combustion engines, comprising a body member, a fuel inlet in the body, an air inlet and a vaporized fuel outlet, a floating ball valve element in the body adjacent the fuel inlet, a needle valve adjustably mounted in the floating ball valve and means for supporting the floating ball valve in the body for free movement, depending upon the amount of air passing through the body, the air inlet end of the body being shaped to provide a Venturi action adjacent the fuel inlet, a post in the body passing through an opening in the floating ball valve to prevent turning of the same,

4

the floating ball valve and its appurtenances being positioned in the body at an angle of approximately 45° to the normal horizontal, adjusting means for the floating ball valve and the needle valve, said adjusting means comprising a rod screw-threadedly fitted into the floating ball valve and including the needle valve as a part thereof, a slot milled on the outer end of the rod for turning adjustment of the same, and a flat milled adjacent the outer end of the rod whereby the same can be fixed in adjusted position.

2. A carburetor as defined in claim 1, wherein the supporting means for the floating valve includes a cap fitted into the body in opposed relationship to the fuel inlet, a valve adjustment locking means on the end of the cap, and a pressure equalizing means in the fuel line adjacent the fuel inlet.

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