April 5, 1927. 1,623,668

J. W. FISHER

CARBURETOR

Filed July 17, 1924

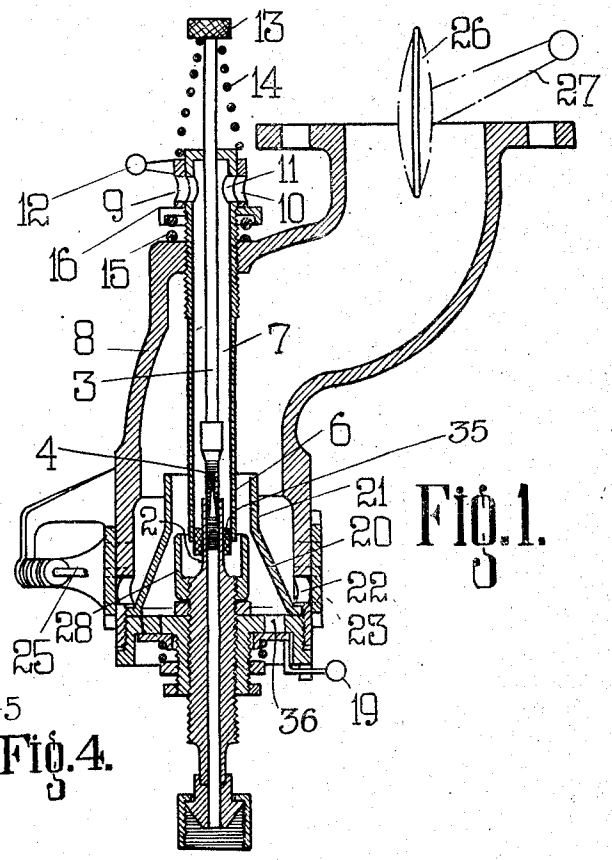


Fig. 1.

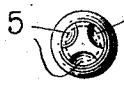


Fig. 4.

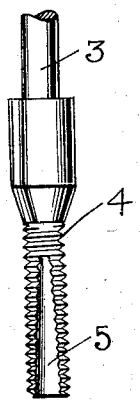


Fig. 5.

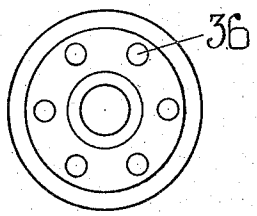


Fig. 2.

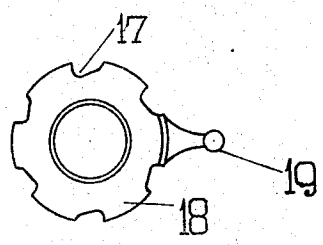


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN WILLIAM FISHER, OF BLACKPOOL, ENGLAND.

CARBURETOR.

Application filed July 17, 1924. Serial No. 726,542.

The present invention relates to improvements in carburetor, particularly suitable for internal combustion engines.

According to the present invention means are provided to spray the fuel into a stream of air which moves in substantially the opposite direction to the said fuel spray whereupon the mixture merges into the path of a supply of air moving parallel with the fuel supply prior to the mixing of this with the oppositely disposed air stream, the whole then moving into the path of a third air supply also moving parallel with the fuel supply. By this means enrichment of the mixture at higher speeds would be prevented owing to the increase in the retarding effect on the fuel flow by the oppositely disposed air current as the velocity thereof increases.

The invention is more particularly described with reference to the accompanying drawings, in which:

Figure 1 is a sectional elevation of one form of carburetor.

Figure 2 is a plan view of the underside and lower portion of Fig. 1.

Figure 3 is a plan view of the means for regulating the pilot jet of air.

Figure 4 is a plan view from below Figure 5.

Figure 5 is an enlarged view of the jet spindle controlling the opening of the fuel nozzle.

Gasoline or the like liquid fuel to be atomized in the carburetor is passed from any usual float chamber or the like through a pipe (not shown) to a nozzle 2; the pipe and nozzle are adapted to be lowered and raised as desired. The opening of the nozzle 2 is regulated by means of a spindle 3 rotated about its axis, whereby a valve 4 is lowered into the opening of the nozzle 2, to reduce the flow of fuel such as gasoline or the like, therethrough. This is rendered possible by the fact that the shape of the valve allows a greater passage for the fuel at its end than at succeeding positions along its length, in that a number of longitudinal grooves 5 are formed on that end of the spindle 3 forming the valve 4 and as shown in Figs. 4 and 5 the grooves formed on the periphery of the valve decrease and the cross sectional area of the valve increases away from the end of the valve.

Both the nozzle 2 and the valve 4 are therefore adapted to be displaced relatively to the end 6 of a wall or tube 7 down which tube a stream of air passes forming a baffle for the fuel supply emitted from the nozzle 2.

A tube 35 made of wire gauze, is provided, attached to the end 6 of the wall of the baffle jet to atomize the fuel supply.

The tube 7 passes through the carburetor body 8 and is covered at its upper end by a cap or sleeve 9 having ports 10 in it which may wholly or completely coincide with corresponding ports 11 in the top end of the tube 7.

Consequently by turning the cap 9 the amount of air passing down the tube 7 to mix with the fuel issuing from the nozzle 2 can be varied as desired. By means of the shape of the valve 4 and its grooves, the fuel supply passing up the pipe 1 will continue to travel in a substantially vertical path on reaching the nozzle 2, until it is met by the downward stream of air which has the effect of preventing enrichment of the mixture at higher speeds. A handle 12 or remote control can be connected for the operation of the cap 9, so that the latter can be set in any desired position.

The spindle 3 can be regulated by means of the milled head 13 and springs 14 are provided to hold the cap 9 in its position over the top end of the tube 7, while springs 15 are interposed between a flange 16 on the tube 7 and the body 8 of the carburetor.

An air supply passes through ports in the base of the carburetor registering with port 17 in a disc 18. This disc is rotated as desired by a handle 19, and the adjustability of this air supply allows for altered conditions in order to effect the correct vacuum at the jet. It will be noticed that this supply of air flows in the same direction as the initial fuel supply.

A conical shaped body 20 having a cylindrical upper portion 21 is provided so that the air entering through the ports 16 and 17 will contact with the mixture of the air and liquid fuel issuing through the wire gauze 35, surrounded by the cup member 28.

A further air supply passes through ports 22 formed in the lower end of the carburetor body and the opening of these ports is regulated by means of a sleeve 23 having a number of ports (not shown). The sleeve is regulated by a remote control with the aid of a spring 24 and Bowden wire 25. The supply of air passes up through the carburetor body outside the conical body 20 and is the

last to contact with the fuel supply. The object of this regulated supply is to adjust the mixture in accordance with running conditions caused by changes in temperature or humidity of the atmosphere and the various types of fuel used. The throttle is arranged on the outlet from the carburetor, the throttle valve 26 being regulated by the operating lever 27 or other suitable arrangement. There are thus three air supplies viz the tube 6, through the ports 36, and through the ports 22 respectively. The amount of opening of the ports 36 and 11 must be relatively adjusted, but once a desirable mixture of fuel and air is attained such ports 36 always remain at the same degree of opening, any future regulation of air supply during the running of the engine being effected by regulation of the ports 22.

The method of operation of this device is as follows: The fuel passes up the pipe 1 and is met by a stream of air passing down the pipe 7 and is mixed therewith within the cup 6. This mixture then proceeds into the space defined by the walls of the conical member 20, where it receives a further supply of air which passes through the ports at the bottom of this member. This mixture then passes out of the chamber 20 toward the valve 26, whereupon it is mixed with a further supply of air which passes through orifices 22 situated in the outer walls of the carburetor. The orifices 11 and the ports at the bottom of the conical chamber 20 are adjusted by the respective control handles 12 and 19 to suit the particular requirements of the particular engine to which attached, and an adjustment of these handles is accomplished when the carburetor is initially fitted to the engine; when once regulated need not be further adjusted unless the valve rods of the engine cylinder or other elements become worn or loose and allow a certain amount of air to pass into and mingle with the mixture. In such a case, the orifices 11 and the said ports are slightly closed to compensate and to restore the mixture to its former proportions. The orifices 22 are regulated according to the humidity of temperature of the atmospheric air which enters the carburetor, which may be accomplished by a remote control 25.

I declare that what I claim is:

1. A carburetor for internal combustion engines comprising a fuel jet, a passage for an air supply moving in a diametrically opposite direction to the fuel supply, ports and a passage for a second air supply moving parallel with the fuel supply, and ports and a passage for a third supply of air substantially adjacent the ports for the second supply of air.

2. A carburetor for internal combustion engines comprising a fuel jet, a passage for an air supply moving in a diametrically opposite direction to the fuel supply, ports and a passage for a second air supply moving parallel with the fuel supply, ports and a passage for a third supply of air substantially adjacent the ports for the second supply of air, and means to isolate the second and third air supplies until the fuel has been partly atomized by the baffling current of air.

3. A carburetor for internal combustion engines comprising a fuel jet, a passage for an air supply moving in a diametrically opposite direction to the fuel supply, ports and a passage for a second air supply moving parallel with the fuel supply, ports and a passage for a third supply of air substantially adjacent the ports for the second supply of air, means to isolate the second and third air supplies until the fuel has been partly atomized by the baffling current of air and a conical shaped member to separate the second and third air currents until the second air current has mixed with the partly atomized mixture.

In witness whereof, I have hereunto signed my name this 25th day of June, 1924.

JOHN WILLIAM FISHER.