Oct. 29, 1929. J. JUHASZ 1,733,348

CARBURETOR

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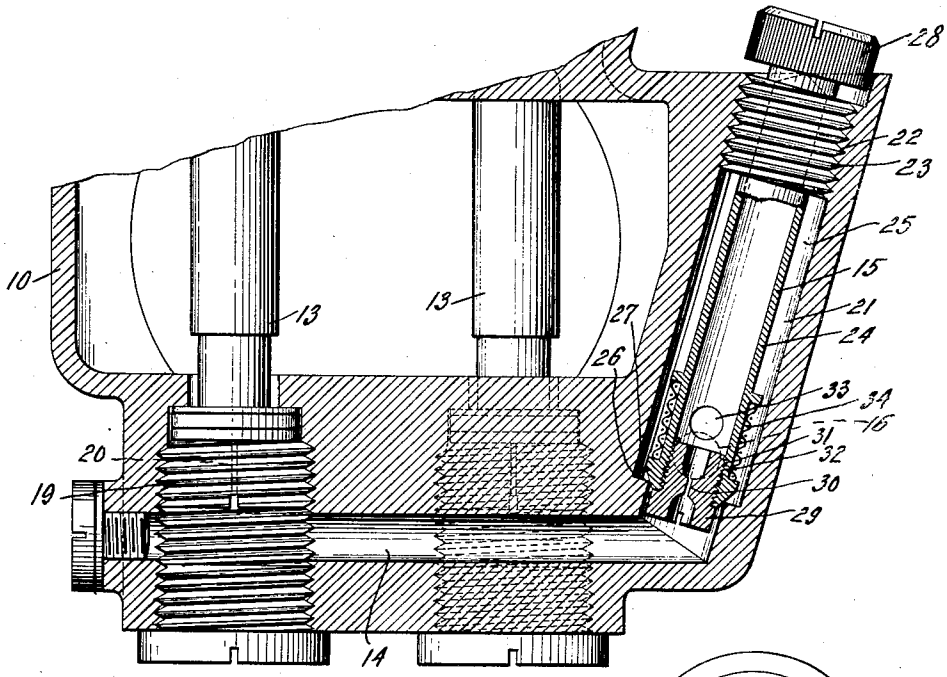


Fig. 4.

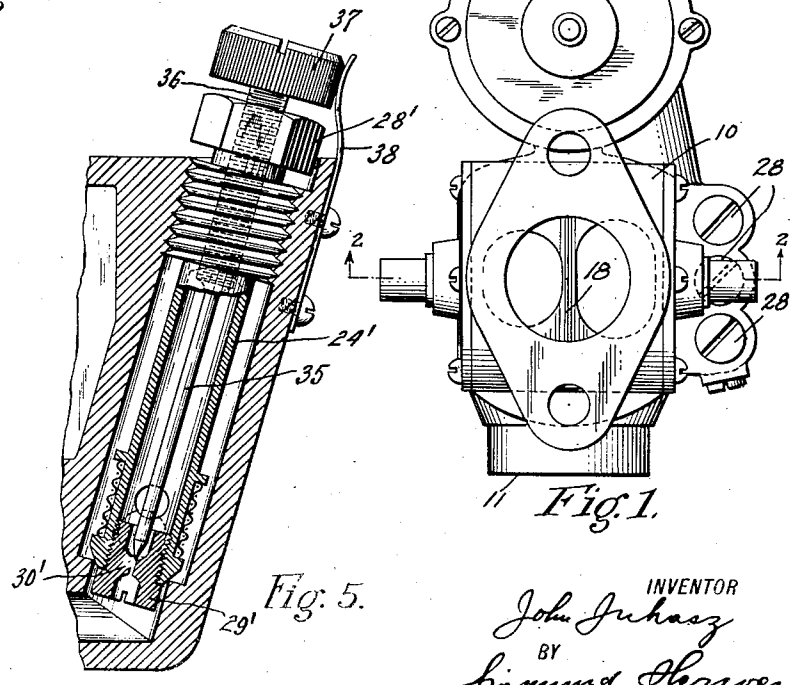


Fig. 1.

Fig. 5.

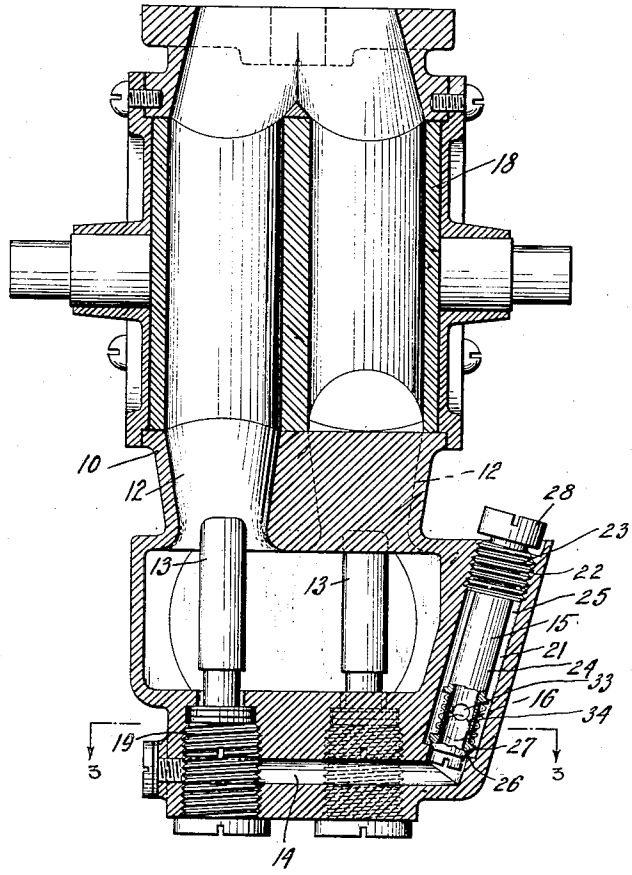
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Fig. 2.



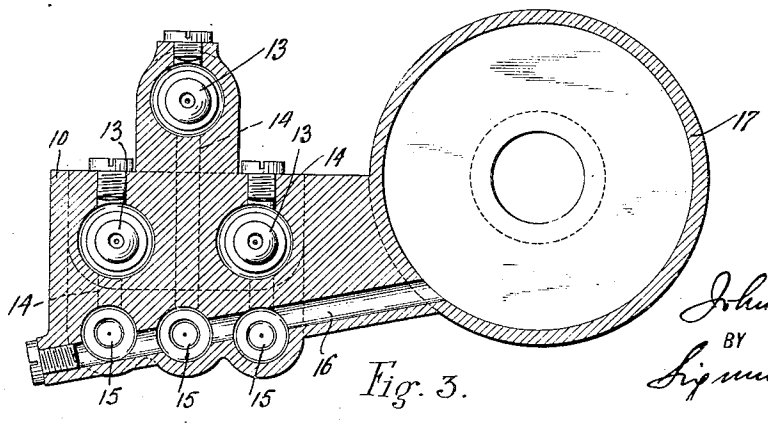


Fig. 3.

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UNITED STATES PATENT OFFICE

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CARBURETOR

Application filed November 13, 1925. Serial No. 68,308.

The present invention relates to improvements in carburetors, and more particularly to the general type of construction which is disclosed in my application for U. S. Letters Patent Ser. No. 684,765, filed January 7, 1924, which has resulted in Patent #1,694,386, Jan. 7, 1924, although applicable to other constructions just as well. In the said application a carburetor is described including a plurality of independent carbureting chambers, a throttle for progressively bringing said carbureting chambers into service, and a suction-controlled nozzle in each carbureting chamber, said nozzles being of different lengths, increasing in length in the order into which said carbureting chambers are brought into service, and each nozzle having a bore gradually decreasing in transverse cross-section from its upper end to its lower end.

The main or most frequent cause of carburetor troubles is due to the fact that the nozzles thereof are apt to be clogged by foreign substances in the liquid fuel. In order to avoid this trouble, usually a fuel screen is employed in the pipe line leading to the carburetor. This screen must, obviously, be cleaned from time to time and this can be accomplished only while the engine, on which the carburetor is mounted, is at full stop. Notwithstanding this screen, foreign matter finds its way into the nozzles of the carburetor, so that the same must be cleaned from time to time. In order to do this, obviously, the carburetor must be taken apart. It can then be assembled only by skilled mechanics, owing to the fact that fine adjustments must be made to bring it back to working condition. When the screen is cleaned and also when the carburetor is taken apart, a considerable quantity of fuel is wasted.

In carburetors which are constructed for variable speed and load engines, the nozzles are usually valve-controlled. In most cases needle-valves are provided. These needle valves extend in practically all constructions into the carburetor from below, and are, for this reason, to some extent inaccessible.

The main object of the present invention is to provide a carburetor construction, wherein the fuel screens are disposed within the carburetor casing, and are so located that they can be withdrawn, for cleaning purposes, without interfering with the operation of the engine and without waste of fuel.

Another object of the invention is to provide a carburetor having atomizing or spraying nozzles and metering or calibrating nozzles arranged in series with said spraying or atomizing nozzles, the arrangement being such that the metering nozzles can be withdrawn from the carburetor while the engine is running.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a top plan view of a carburetor constructed in accordance with the present invention; Fig. 2 is a central vertical section taken therethrough; Fig. 3 is a section taken on line 3—3 of Fig. 2; Fig. 4 is a section similar to the one shown in Fig. 2 of the lower portion of the carburetor, on a larger scale; and Fig. 5 is a section similar to the one shown in Fig. 4 of a modified device.

Referring now first to Figs. 1 to 4, inclusive, of the drawings, the numeral 10 indicates a carbureter casing, in the side of which is formed an opening 11, forming the air inlet to the carbureting chambers 12, of which three are shown in the drawings, although any other suitable number may be employed according to the requirements. These chambers are in the present case in the form of Venturi passages.

Into each of these chambers projects a spraying or atomizing nozzle 13. Each of these nozzles communicates through a pas-

sage 14 with a metering or calibrating nozzle 15, the latter communicating, as will hereinafter appear, through a passage 16 with a float chamber 17 of any suitable construction. Above the carbureting chambers is disposed a throttle 18, in the present case a cylindrical throttle, for the well know purpose.

The spraying or atomizing nozzles 13 are of the construction described in the application for Letters Patent above referred to, the elements of each nozzle being held in proper position within the carburetor casing by a screw plug 19, having an aperture 20 in constant communication with the respective passage 14. These apertures are of the maximum size required for the respective carbureting chambers, and are also sufficiently large to permit of the passage of any foreign matter which may come through the metering or calibrating nozzles 15.

With each spraying or atomizing nozzle is associated, as above stated, a metering or calibrating nozzle 15. These calibrating nozzles are alike in construction, each of the same being, preferably, disposed in the plane of the spraying or atomizing nozzle associated therewith and extending at an acute angle thereto. These metering or calibrating nozzles are each located in a bore 21, the lower section of which connects the passage 16 with one of the passages 14. These bores are internally screw-threaded at their upper ends, as shown at 22, the said threads meshing with exterior threads on a shoulder 23 of a tubular body 24, the latter having an outer diameter that is smaller than the diamettr of the bore 21 associated therewith, so that between the said tubular body and the wall of the bore is provided an annular passage 25. Below the passage 16 is provided, in each bore 21, a valve seat 26, for cooperation with the conical lower section 27 of the tubular body 24. The upper end of each tubular body 24 is closed by a, preferably, milled head 28, which is disposed outside of the carburetor casing, and the lower end of each tubular member is closed by a plug 29, provided with an orifice 30. This plug constitutes the metering or calibrating element of the respective nozzle 15, its orifice being smaller than the aperture 20 in the spraying or atomizing nozzle 13 associated therewith, as clearly shown in Fig. 4 of the drawings. The plugs may be mounted on the tubular bodies 24 in any suitable manner. In the case illustrated in the drawings, each plug is provided with exterior screw-threads 31, meshing with interior screw-threads 32 on the lower end of the respective tubular body 24. Each of the tubular bodies 24 is provided with a plurality of openings 33 adjacent its lower end, the said openings being covered by a fine-meshed wire fabric 34, which may be held in place in any suitable manner. The fuel, issuing from the passage 16, passes through the openings 33 into the tubular bodies 24, and through the orifices 30 in the plugs 29 thereon into the passages 14 toward the spraying or atomizing nozzles 13.

The operation of this device is as follows: As stated above, the apertures 20 in the plugs 19 are of the maximum size required for the Venturi passages associated therewith. The orifices 30 in the plugs 29, on the other hand, are of smaller size than the apertures 20, they being dimensioned to permit of a passage of the proper amount of fuel to the engine, on which the carburetor is mounted. One of the metering or calibrating nozzles is provided with an orifice 30 of a size so as to supply fuel to the spraying or atomizing nozzle associated therewith when the engine is running idle or at low speed, and the other metering or calibrating nozzles are provided with orifices for supplying fuel at higher speeds, the throttle valve being so constructed that it brings the carbureting chambers progressively into service. It is to be noted that the fuel flows from the passage 16 into the metering or calibrating nozzle, it passing through the screens 34 so that all foreign matter is prevented from passing through the orifices 30 in the plugs 29, attention being called to the fact that the fuel flows from the interior of the tubular bodies 24 downwards into the passages 14 and then upwards through the apertures 20 into the spraying or atomizing nozzles. The foreign matter collects in the annular passages 25 and may be removed therefrom by unseating the conical portions of the tubular bodies 24 from the valve seats 26. When these conical portions are unseated and the engine is sped up, the foreign matter flows through the passages 14 toward the spraying and atomizing nozzle and is drawn through the latter toward the engine, the apertures 20 being large enough to prevent clogging of the same. Inasmuch as the upper ends of the bores 21 extend above the normal level of the fuel in the float chamber 17, the metering nozzles may be removed, as a whole, from the carburetor without loss of fuel and while the engine is kept in operation. These metering or calibrating nozzles are removed from time to time in order to clean the screens thereon, and also when it is intended to put a new set of plugs 29 in position thereon, in case smaller or larger calibrating orifices are to be used in the operation of the engine. With each carburetor is furnished a plurality of sets of plugs 29 to allow the desired adjustment to be made. The apertures 20 in the plugs 19 must be of a size to permit stalling of the engine when the calibrating nozzles are removed from the carburetor; that is to say they must be of a size which will prevent the formation of an overreach mixture with the calibrating nozzles removed from the carburetor.

The modification illustrated in Fig. 5 differs from those above described in that the

calibrating or metering nozzle is provided with a needle valve 35. The pointed end of this valve co-operates with the calibrating orifice 30′ in the plug 29′, the needle extending through the head 28′ of the tubular body 24′, it being provided with screw-threads 36, meshing with threads in the head 28′. The needle valve is provided with a, preferably, milled knob 37, which is disposed above the head 28′. In order to prevent the needle valve from rotating in one or the other direction after the proper adjustment has been made, a spring 38 is fixed to the carburetor casing, said spring bearing against the milled knob 37.

It is to be noted that the metering or calibrating nozzles are conveniently accessible, they being disposed at the side of the carburetor casing, in contradistinction to most of the structures heretofore in use in which the adjustments are made from below.

What I claim is:—

1. A carburetor including a carbureting chamber, a spraying or vaporizing nozzle therein, said carburetor being provided with a bore, a float chamber, a communication between said float chamber and said bore, a communication between said bore and said nozzle, a calibrating nozzle removably mounted in said bore, a valve seat formed in said bore between its inlet and outlet, an enlargement on said calibrating nozzle for co-operation with said valve seat, said calibrating nozzle being hollow and provided with an opening above said enlargement through which the fuel flows from said bore into said calibrating nozzle, and a screen covering said opening, said calibrating nozzle and said screen being removable, as a unit, from the carburetor and the inlet to said spraying or vaporizing nozzle being larger than the calibrating opening in said calibrating nozzle but not large enough to cause formation of an overrich mixture when said calibrating nozzle is removed from the carburetor.

2. A carburetor including a carbureting chamber, a spraying or vaporizing nozzle therein, said carburetor being provided with a bore, a float chamber, a communication between said float chamber and said bore, a communication between said bore and said nozzle, a tubular body in said bore closing the upper end of the latter, said tubular body having an outer diameter smaller than the inner diameter of said bore, a valve seat formed in said bore between its inlet and outlet, an enlargement on the lower end of said tubular body for co-operation with said valve seat, a calibrating plug closing the lower end of said tubular body, said tubular body being provided with an opening above said enlargement through which the fuel flows from said bore toward said calibrating plug, and a screen covering said opening, said tubular body, calibrating plug and screen being removable, as a unit, from the carburetor and the inlet to said spraying or vaporizing nozzle being larger than the calibrating opening in said plug but not large enough to cause formation of an overrich mixture when said calibrating nozzle is removed from the carburetor.

Signed at New York, in the county of New York and State of New York, this 29th day of October, A. D. 1925.

JOHN JUHASZ.