Apr. 17, 1923. 1,452,451

A. H. WEBBER

CARBURETOR

Filed Dec. 7, 1920

Fig. 1.

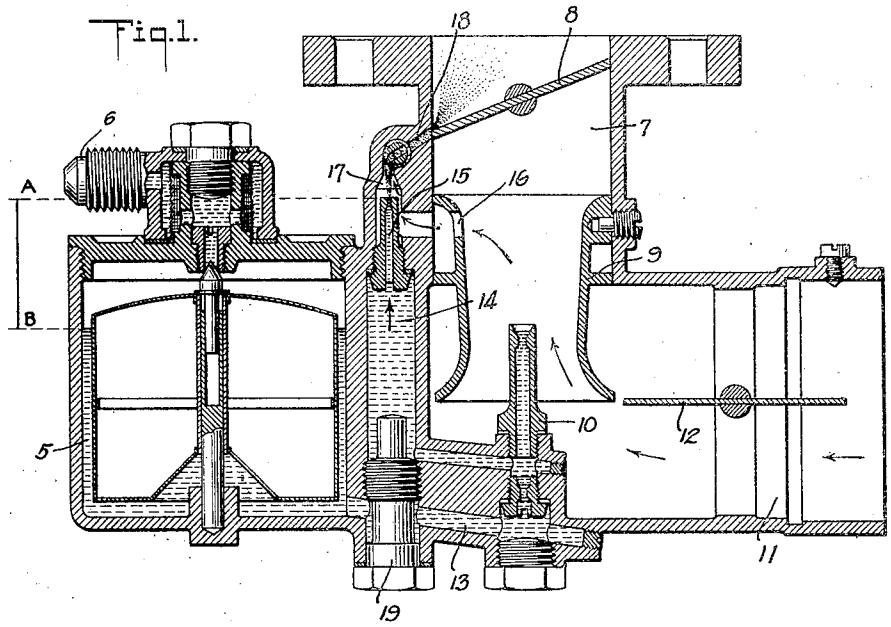


Fig. 2.

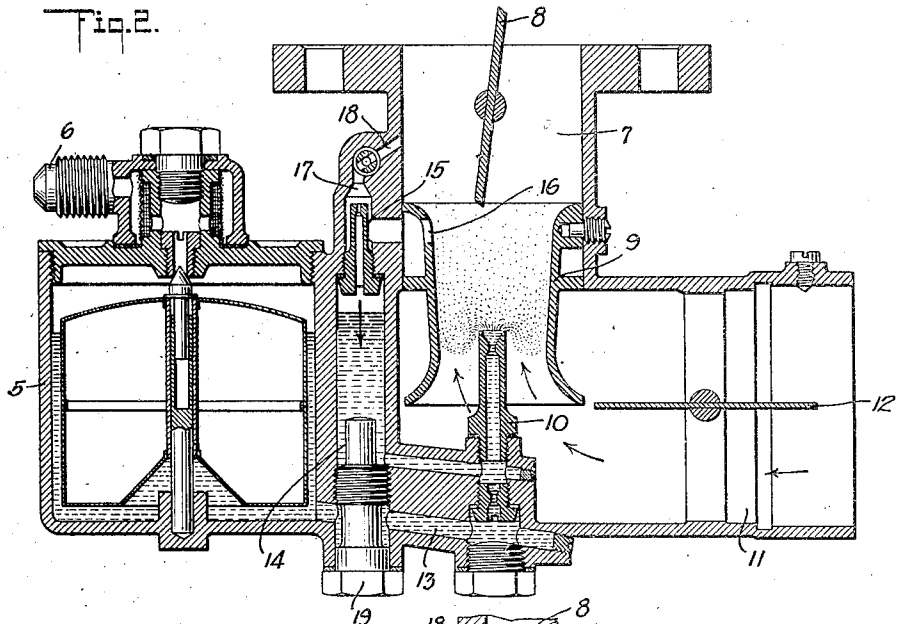
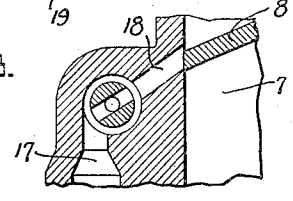


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

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CARBURETOR.

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To all whom it may concern:

Be it known that I, ARTHUR H. WEBBER, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Carburetor, of which the following is a full, clear, and exact description.

My invention relates to a carburetor, and aims to provide certain new and useful improvements in connection with a device of this character.

In connection with carburetors it is a well appreciated fact that considerable difficulty has been experienced in providing an accelerating mixture. In other words, although the high speed mixture might be satisfactory, the operator will find that, in the event that the throttle valve were suddenly opened, and a load suddenly placed upon the motor, that in most instances the mixture produced by the carburetor would not be such as to cause the motor to accelerate properly, and in many instances the motor would "stall."

Thus it is an object of the present invention to provide a carburetor which will produce an extremely efficient mixture during idling, and high speeds and will additionally produce an efficient accelerating mixture causing the motor to readily take hold during this interval, and virtually preclude any danger of the same stalling, upon it being suddenly subjected to a load, at a relatively low engine speed.

A further object of the present invention is that of providing an extremely simple construction permitting of the accomplishment of this purpose, this construction being of such a nature as to effectually overcome any danger of the parts refusing to function.

With these and further objects in mind the present invention aims to provide a carburetor including a housing which will comprise a structure including a plurality of nozzles, one of which is adapted to be actuated during the idling of the motor, a second of the same operating during all speeds higher than idling, the present invention further contemplating means which will serve to build up a reserve supply of fuel during idling which will enrich the mixture during the accelerating interval to produce maximum power at such time and consequently overcome the difficulty aforementioned.

Reference is had to the attached sheet of drawings as illustrating one practical embodiment of this invention, and it will be seen in this drawing that—

Figure 1 is a sectional side view of a carburetor embodying my improved construction and showing the parts of the same during idling position, and

Figure 2 is a view similar to Figure 1 but showing the parts during the high speed position of the carburetor, and

Figure 3 is an enlarged fragmentary sectional view of a detail of construction.

In these views the reference numeral 5 indicates the float chamber provided with the usual fuel intake 6, and enclosing the conventional float that serves to regulate the flow of fuel through this inlet. My carburetor further embraces a housing of any desired type, which provides a mixing chamber 7 above which is positioned a throttle valve 8, so that the flow of air through the venturi 9 and past the nozzle 10 may be effectually regulated, it being of course understood that this air enters through any desirable opening 11 in the housing at a point beyond the venturi 9, and is susceptible to control by means of the choke valve 12.

It is to be appreciated that the foregoing is conventional construction, and may be of any desired type, and a flow of fuel from the float chamber 5 into the nozzle 10 is permitted by the passage 13 extending between these two members. However, contrary to the conventional construction, it will be seen that the housing of the carburetor provides a well 14 which latter has its upper end extending to a point well above the upper end of the nozzle 10, and mounted therein at its upper end is a nozzle 15, it being also seen that the lower end of this well is connected to the float chamber 5 by means of a passage extending between the base of the nozzle 10 and the lower portion of the well.

Further, it will be noted that in the embodiment illustrated I provide a passage 16 in the body of the venturi 9, and this passage is continued in the wall of the carburetor housing and merges into a mixing chamber 17 within which the upper end of the nozzle 15 extends. It is also to be noted that a passage 18 has its upper end in communication with the interior of the housing, and its lower end is connected with the up-

per end of the mixing chamber 17, it being seen, as in Figure 3 that a valve of any desirable type may be interposed in the latter passage to regulate the flow through the same. Also attention being invited to Figures 1 and 3, it will be noted that I prefer to mount the throttle valve 8 in such a position that when the latter is closed, the end of the passage 18 will be partially closed for a purpose hereinafter brought out. Thus assuming that the throttle valve 8 is closed to its fullest position, it will be understood that a suction will be exerted within the well 14 through the orifice of the nozzle 15, and this suction will quickly result in a column of fuel completely filling the well, which column has its upper end terminating at the upper end of the nozzle 15, or in other words at a point well above the nozzle 10. Simultaneously with this action on the part of the fuel, it will be understood that air will flow through the passage 16 and past the nozzle 15, at which point it will become charged with the fuel, thus forming an explosive mixture which moves through the passage 18 and so into the intake manifold of the engine.

However, assuming that an operator opens the throttle valve 8, it will be understood that the latter will not permit any appreciable flow of air directly through the venturi 9, and into the intake manifold before it has completely uncovered the passage 18. In other words, substantially the entire suction of the engine will be exerted upon the now completely open end of the passage 18, and this will obviously cause first a greater flow of fuel mixture, and secondly a richer fuel mixture, incident to the fact that no compensating structure is provided in association with the primary nozzle 15. Upon the throttle valve 8 moving to a still more open position, the flow of fuel mixture from the passage 18 will diminish, and subsequently cease altogether.

As the throttle is opened the flow of air through the venturi 9 increases and as soon as the suction at the outlet of passage 18 is less than that at the nozzle 10, the fuel column within the well 14 will begin to fall and drop back through its communicating passage into the nozzle 10 from the upper end of which it will overflow. The fuel mixture will now be produced by the nozzle 10 in association with the venturi 9, and it will be understood that incident to the overflowing of the fuel from the upper end thereof that the mixture will be virtually surcharged with fuel during that interval of time which is required to exhaust the excess height of the fuel column within the well 14. Thus an extremely rich mixture will be produced by the carburetor, while the motor is being accelerated.

Thus all of the objects of this invention have been accomplished, and it will further be understood that numerous modifications of structure might readily be resorted to without in the least departing from the scope of my claim, which is—

A carburetor including in combination a body providing a mixing chamber, a venturi positioned in advance of said mixing chamber, a throttle valve positioned at a point beyond said mixing chamber, a nozzle extending into said venturi, said carburetor being formed with a well having its end extending into a plane above that occupied by the upper end of the nozzle to permit fuel to stand therein at a level higher than the upper end of said nozzle, a source of fuel supply connected to both said nozzle and well, a second nozzle communicating with the upper end of said well, said carburetor being formed with an opening for the passage of air past said last-named nozzle and also providing a mixing chamber adjacent said nozzle, said carburetor body being further formed with a passage extending from said last-named mixing chamber to a point adjacent said throttle valve.

ARTHUR H. WEBBER.