H. G. ROBINSON AND L. K. STINSON.

CARBURETER.

APPLICATION FILED MAR. 4, 1918.

1,352,316. Patented Sept. 7, 1920.

Fig. 1.

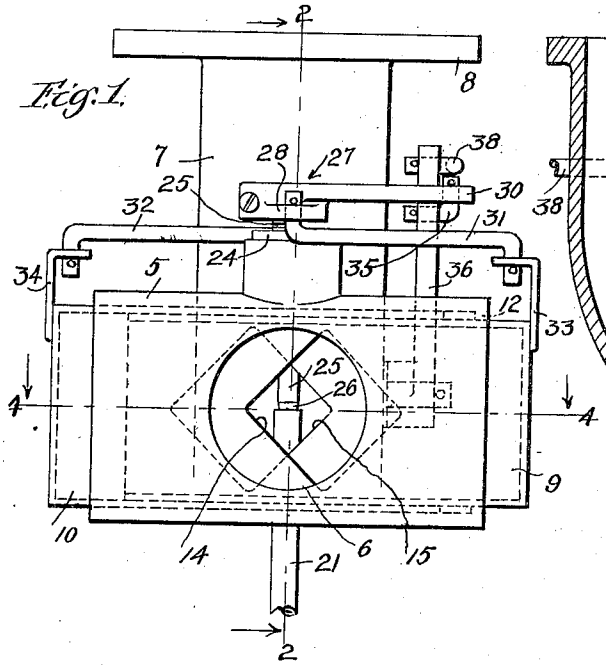


Fig. 2.

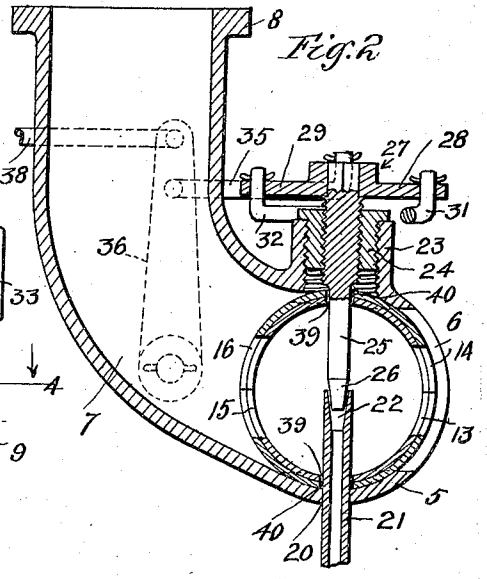


Fig. 3.

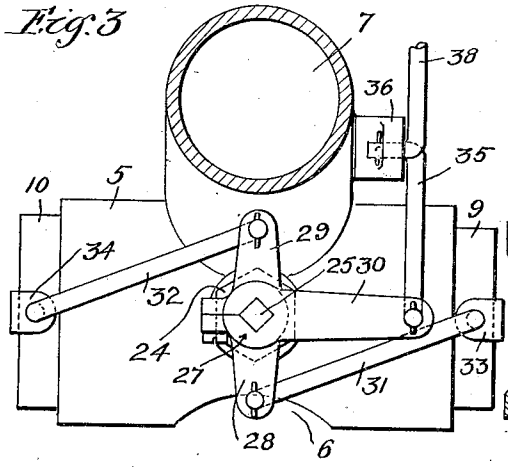
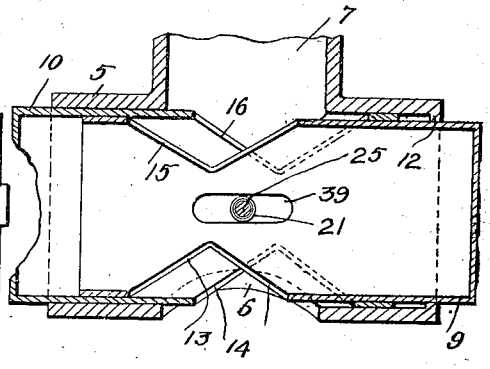


Fig. 4.



INVENTORS

Harley G. Robinson

Lewis K. Stinson

By Edmund A. Strauss

ATTORNEY

UNITED STATES PATENT OFFICE.

HARLEY G. ROBINSON AND LEWIS K. STINSON, OF LOS ANGELES, CALIFORNIA.

CARBURETER.

1,352,316. Specification of Letters Patent. Patented Sept. 7, 1920.

Application filed March 4, 1918. Serial No. 220,127.

To all whom it may concern:

Be it known that we, HARLEY G. ROBINSON and LEWIS K. STINSON, both citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Carbureters, of which the following is a specification.

Our invention relates more specifically to carbureters employed in connection with internal combustion engines, for converting the liquid fuel into a gaseous mixture for motive purposes.

It is well known that the speed of automobiles, aeroplanes, and like structures propelled by explosive engines may be increased by advancing the time of ignition of the explosive mixture, by increasing the supply of air to the explosive mixture, and also by increasing the quantity of explosive mixture in proportion to the increasing speed. It is therefore customary to provide explosive engines or structures propelled by them with means for advancing the ignition and for increasing the air and fuel supply in order to obtain greater efficiency of operation. The means above referred to for increasing the air and fuel supply to form a properly proportioned mixture have to a great extent proved inaccurate, often supplying the fuel and air in improper proportions for the speed at which the engine is running.

It is an important object of our invention to provide a mechanism which will deliver an exact proportion of air and fuel for carburation best suited for the speed at which the engine is running.

A further object is to provide a carbureting mechanism in which the air and fuel supply to the carbureter is positively increased or diminished in exact proportions to the speed at which the engine is running, being operated in connection with the engine throttle mechanism.

A still further object is to provide a mechanism in which the fuel and air supplies are simultaneously regulated.

Another object is the provision of a mechanism in which the air and fuel supply chamber is connected directly to the intake manifold of an engine, and in which the mixture outlet passage leading therefrom is free from obstructions.

An embodiment of our invention herein disclosed may be generally described as comprising a mixing chamber having fuel inlet and gas outlet openings controlled by reciprocating members provided with openings, said openings adapted to be brought into or out of register on a reciprocation thereof, a fuel delivery valve being located within said chamber, both members and fuel valve being operated in unison and controlled from the throttling mechanism.

We accomplish the above objects by means of the mechanism herein described and illustrated in the accompanying drawings, in which;

Figure 1, is an end elevation of our carbureter.

Fig. 2, is a central vertical section taken on line 2—2 of Fig. 1.

Fig. 3, is a plan view of the mixing chamber, and fuel delivery valve, the gas outlet leading therefrom being in section.

Fig. 4, is a transverse section through the mixing chamber taken on line 4—4 of Fig. 1.

Referring more particularly to the drawings, we desire to state that we have not illustrated a float chamber in connection with our invention, as such mechanisms are well known, and furthermore it does not form a part of our invention, any well known float chamber being connected therewith in the usual well known manner. The fuel mixing chamber preferably consists of an open ended cylindrical tube 5 provided in its side wall with an air inlet opening 6, and an oppositely disposed mixture outlet pipe 7 which curves upwardly, as best shown in Fig. 2 of the drawing, terminating in a flanged end 8 adapted to be bolted or otherwise secured to the lower end of an intake manifold of an explosive engine.

Telescopically mounted within mixing chamber 5 are cylindrical tubes 9 and 10, each having a wall 11 closing the outer end thereof. Tube 10 telescopes within the chamber 5, while tube 9 telescopes within tube 10, as clearly shown in Fig. 4 of the drawings, the difference in the external diameter of tube 9 and in the internal diameter of chamber 5 being provided for by means of an annular bearing flange 12 formed on one end of chamber 5. Tubes 9 and 10 are each provided with air inlet openings 13, 14, and mixture outlet openings 15 and 16, said openings being preferably rectangular in configuration, the outlet openings communicating with the mix-

ture outlet pipe 7 leading to the engine manifold (not shown). Tubes 9 and 10 are approximately the same length as chamber 5, so that when the tubes are nested therein the openings 13 and 14 will be out of register, and will close air inlet openings 6 entirely with the exception of a very small aperture, which is necessary to insure the admission of sufficient air to chamber 5 required by the engine when idling.

The mixture outlet openings 15 and 16 formed in tubes 9 and 10 control the volume of carbureted mixture admitted to outlet pipe 7, said openings being oppositely disposed to the air inlet openings 13 and 14, and operating simultaneously therewith. The area of the mixture outlet opening in the mixing chamber is slightly greater than the air inlet opening, thereby insuring the delivery of the entire volume of carbureted mixture to the engine cylinders.

When tubes 9 and 10 are reciprocated away from each other the air inlet and mixture outlet openings will almost be brought into register and provide openings of the maximum area, while on a reciprocation toward each other the openings will provide a minimum opening. As both pair of openings in tubes 9 and 10 are rectangular in configuration and have one of their greatest diameters vertically disposed, it will be noted that on a reciprocation to or from each other that the opening formed thereby will be always centrally disposed with respect to the air inlet opening 6 and the mixture outlet 7 formed in the cylindrical tube 5, thus concentrating the air sucked through the inlet opening directly against the fuel delivery nozzle.

The bottom of mixing chamber 5 midway between its ends is provided with aperture 20, fuel inlet pipe 21 passing therethrough and terminating within the chamber at approximately the center thereof. The end of pipe 21 forms a nozzle within chamber 5 and is provided with a cone shaped valve seat 22, and the wall of said chamber directly opposite valve seat 22 is provided with a circular apertured neck 23 exteriorly threaded for the reception of an apertured screw plug 24, the aperture in said plug being threaded for the reception of a threaded valve stem 25, the lower end 26 of said stem being cone shaped and seating on valve seat 22 of the fuel delivery valve. The upper end of valve stem 25 projects a slight distance above plug 24, the end of the same being squared for the reception of a lever 27, having a plurality of arms 28, 29 and 30. Pivotally connected to lever arms 28, 29, which are oppositely disposed, are operating rods 31, 32, the outer end of said rods being pivotally connected to brackets 33 and 34 respectively, which are rigidly secured to the outer ends of tubes 9 and 10 at the outer end thereof. Arm 30 of lever 27 is pivotally connected by a pull rod 35 to a vertically disposed rock lever 36, said lever being pivoted to one side of the mixture outlet tube 7, as clearly shown in Fig. 3 of the drawings. Pivotally secured to the upper end of lever 36 is an operating pull rod 38 which extends rearwardly and is connected to foot and hand operating levers of usual construction (not shown). If desired, the pitch of the threads formed on the upper end of valve stem 25 may be varied to cause the valve stem to rotate more quickly or more slowly, as desired.

In order that the valve stem and fuel inlet pipe will not interfere with the reciprocal movement of tubes 9 and 10, we have provided longitudinal elongated slots 39 and 40 in the walls of said tubes, said slots being oppositely disposed and surrounding the inlet tube 21 and valve stem 25, as clearly shown in Figs. 2 and 3 of the drawings.

The operation of our mechanism will be clearly apparent from the foregoing description, and it will be seen from the above that we have provided a simple mechanism whereby the air inlet, the fuel supply valve and mixture outlet openings are all controlled in unison, the increase or decrease in the size of the various openings, including the operation of the fuel supply valve, being regulated so as to form a mixture best suited for the engine at the speed at which it may be running.

What we claim is:

A carbureter comprising an open ended cylindrical mixing chamber having oppositely disposed air inlet and mixture outlet openings in its wall, a pair of cylindrical members each having a pair of oppositely disposed openings therein reciprocatingly mounted in said mixing chamber, the outer ends of said members being closed, a fuel valve mounted in said mixing chamber, and a single means to reciprocate said cylindrical members and to regulate the amount of fuel delivered by said valve.

In witness that we claim the foregoing we have hereunto subscribed our names this 18th day of February, 1918.

HARLEY G. ROBINSON.
LEWIS K. STINSON.