C. D. HERSHBERGER.

CARBURETER.

APPLICATION FILED JULY 27, 1910.

993,065.

Patented May 23, 1911.

2 SHEETS—SHEET 1.

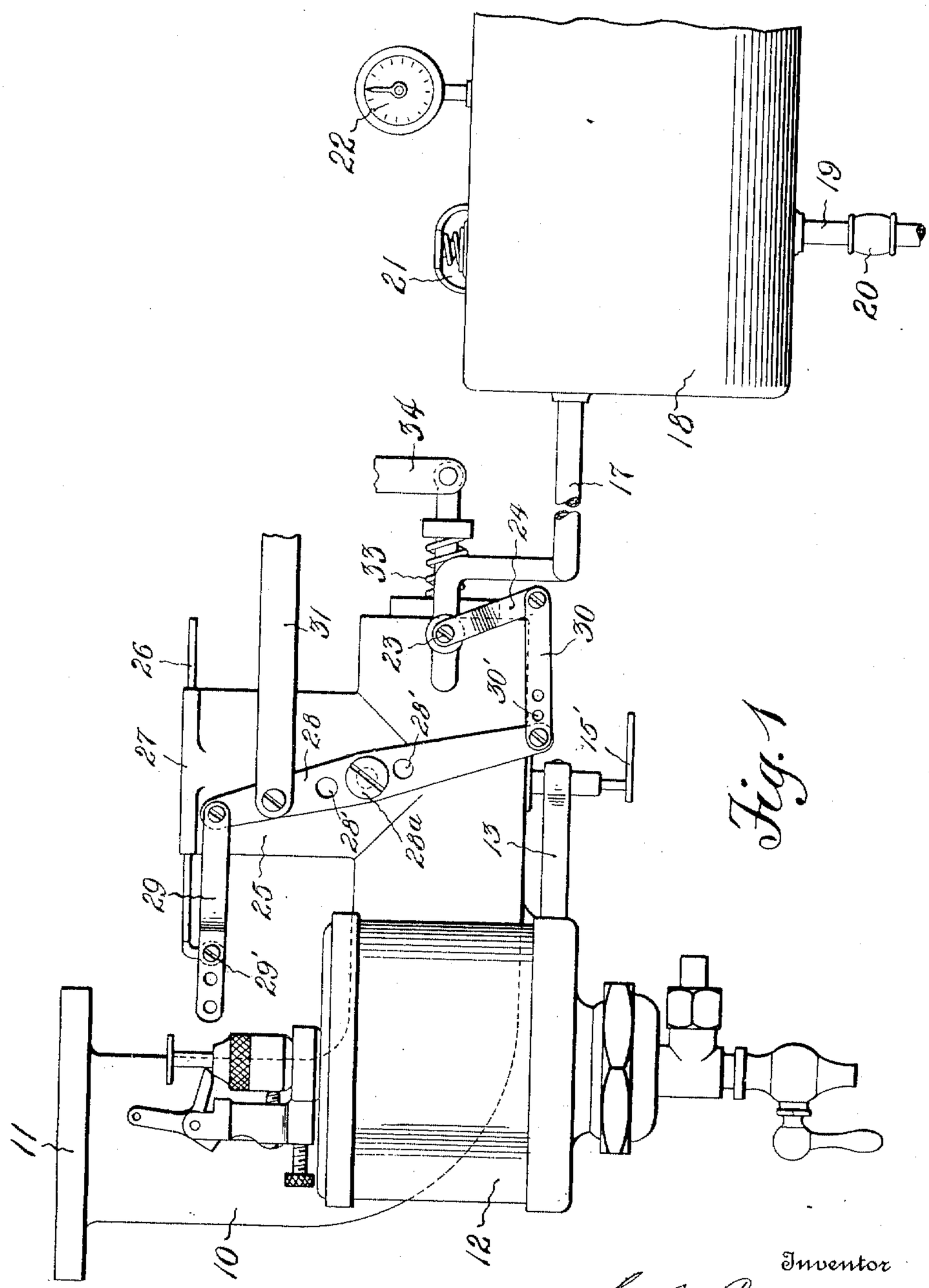

Fig. 1

Witnesses

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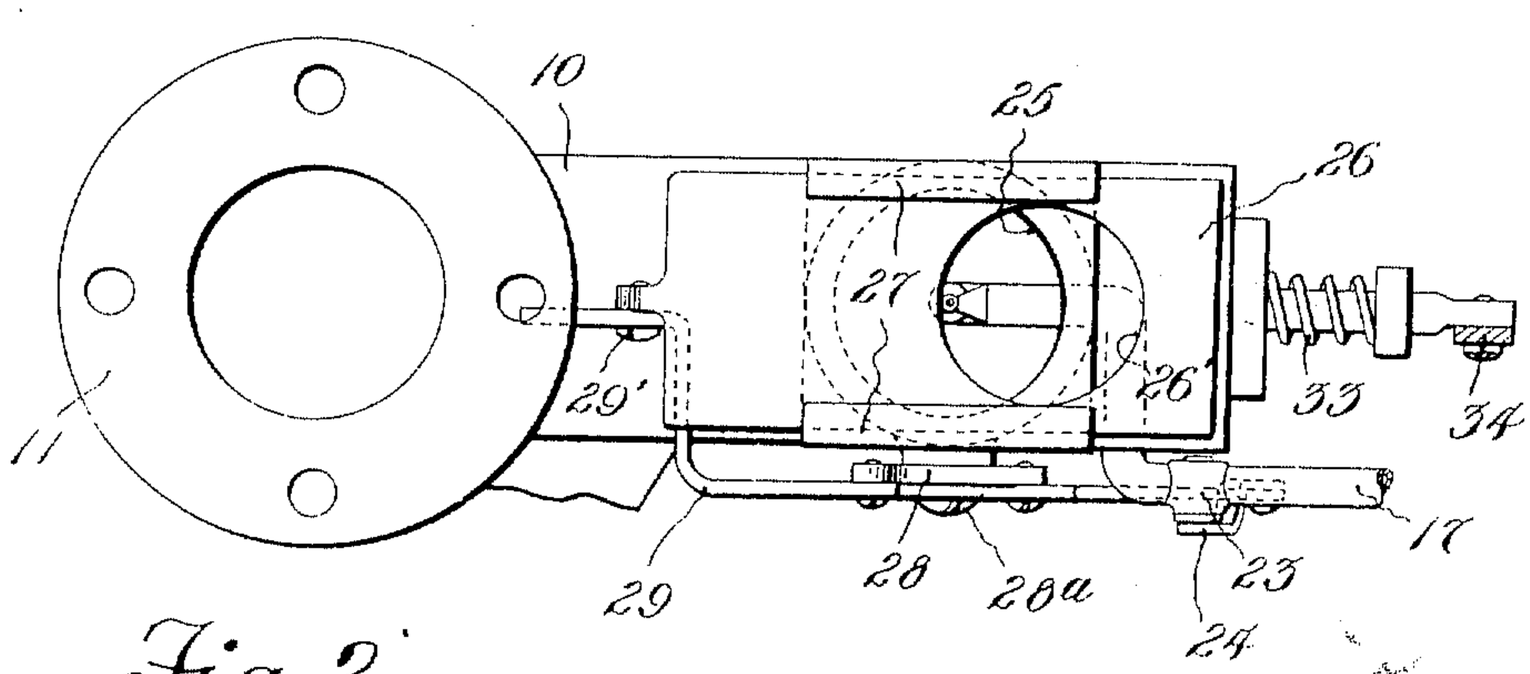

Fig. 2

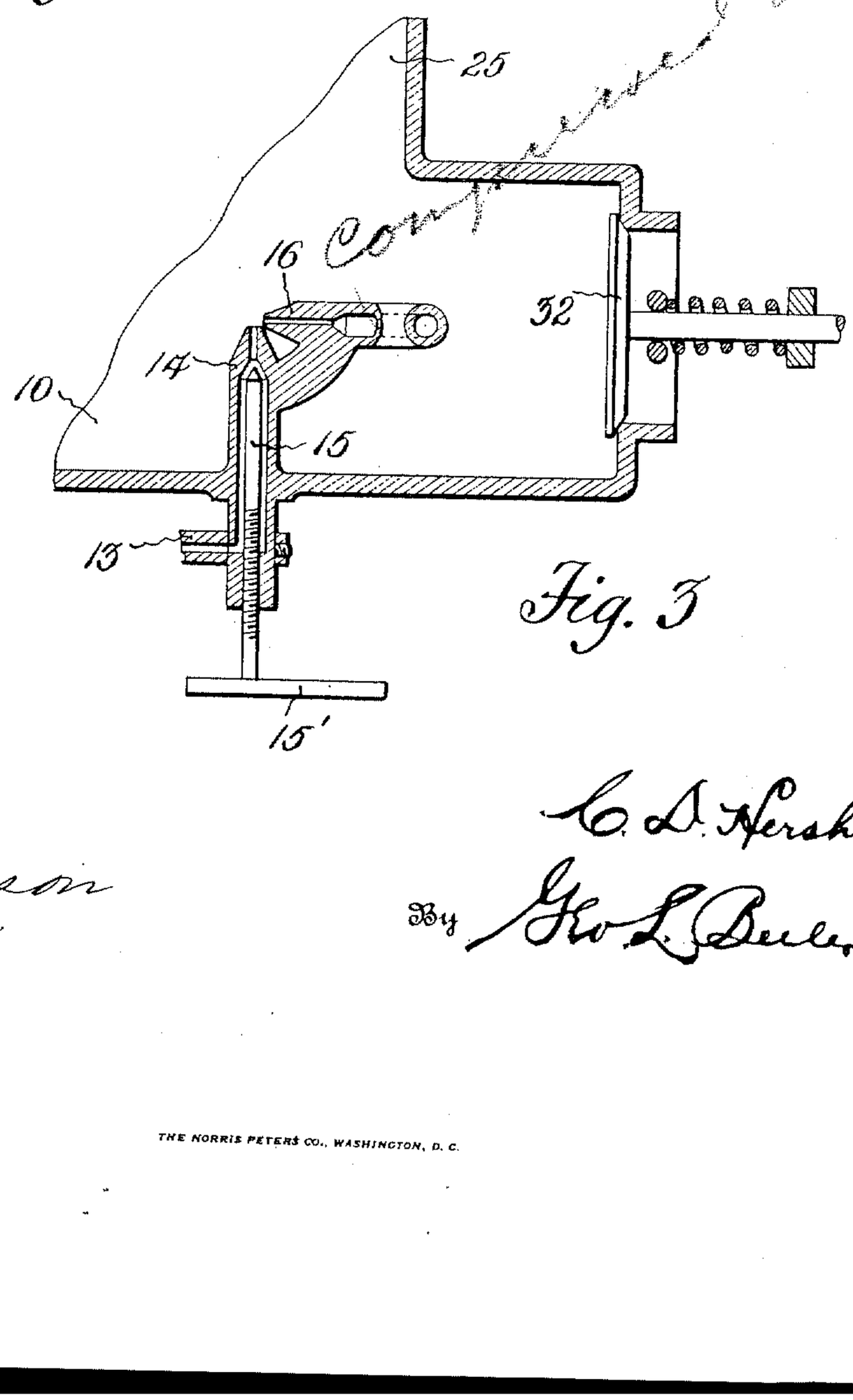

Fig. 3

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UNITED STATES PATENT OFFICE.

CHARLES D. HERSHBERGER, OF MOUNT PLEASANT, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO ISAAC F. OVERHOLT, OF MOUNT PLEASANT, PENNSYLVANIA.

CARBURETER.

993,065. Specification of Letters Patent. Patented May 23, 1911.

Application filed July 27, 1910. Serial No. 574,085.

To all whom it may concern:

Be it known that I, CHARLES D. HERSHBERGER, a citizen of the United States, residing at Mount Pleasant, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Carbureter, of which the following is a specification.

This invention relates to hydrocarbon engines and has particular reference to improved carbureting devices and among the objects of this invention are to provide means to permanently vaporize and mix the liquid fuel; to deliver to the engine a perfectly dry gas or mixture; to provide a method of carburation that will be entirely independent of the action or speed of the engine; to give a range of perfect throttling as wide as the range of speed of the engine will permit; to insure the engine to operate on a perfect mixture of air and fuel at any or all speeds, for after the proper proportions of the component parts of the mixture are once determined and the regulating devices set therefor, such proportion will remain constant independent of the speed or action of the engine; to provide a great saving in fuel and thereby prevent disagreeable odors commonly resulting from imperfect mixtures or combustions; to increase the weight efficiency of the engine, and also to maintain the engine parts in cleaner and better working condition than is usual.

The foregoing and other objects of the invention are attained by the mechanism hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a carbureter constructed in accordance with this invention and with which are associated certain other parts. Fig. 2 is a plan view of the carbureter. Fig. 3 is a vertical longitudinal section of a part of the device described below.

Throughout the following detailed description and on the several figures of the drawings similar parts are referred to by like reference characters.

Referring particularly to the drawings 10 indicates what may be considered a mixing chamber, of any suitable size and which may be located at any convenient place with reference to the engine cylinder or cylinders. In this connection it is to be noted that the device is applicable to any or all types of hydrocarbon engines, whether stationary or otherwise. The upper end 11 of the said chamber is shown as being provided with a flange adapted to be connected either to the body of the engine or to a pipe leading thereto. 12 indicates any conventional form of float feed device controlling the operation or flow of gasolene or other liquid fuel through a pipe 13 leading into a substantially vertically arranged nozzle 14 terminating at about the longitudinal center of the mixing chamber. The float tank as usual is designed to maintain a proper level of fluid in the nozzle at any desired elevation. The volume of fluid flowing through the nozzle is adapted to be controlled by a needle valve 15 operable vertically in the nozzle. By rotating the inlet valve by means of a finger piece 15′ the volume of fluid may be increased or decreased or entirely shut off.

Located adjacent the point of the nozzle 14 and preferably at right angles thereto is an air blast nozzle 16 adapted to direct a fine jet of air under high pressure directly across the bore of the nozzle 14, whereby the hydro-carbon is withdrawn by suction from the nozzle and consequently very finely broken up and vaporized for intimate and complete mixture with the air on the interior of the mixing chamber 10. The blast through the nozzle 16 may be derived from any suitable source in any convenient manner. As indicated the nozzle 16 constitutes the extremity of an air pipe 17 leading from a compressed air reservoir 18 which may receive its charge through a pipe 19 from any source of compressed air. The pipe 19 is shown provided with any suitable form of check valve 20 to prevent the loss of the contents of the reservoir in a reverse direction. and also is provided with a safety valve 21 and any convenient form of indicator 22 whereby the proper pressure may be maintained with safety in the reservoir and the condition observed.

Located at any convenient point in the pipe 17 is a blast valve 23 to which is connected an arm 24. By turning the valve 23 in its seat the strength of the blast may be regulated and consequently the amount of fluid to be withdrawn from the nozzle 14 will be controlled. In accordance with the probable needs for any particular engine or work to be performed by it under ordinary conditions the needle valve 15 being once set

for any particular size of engine the various amounts of fuel which may be required during the operation of such engine will be determined entirely by the control of the blast valve 23.

In the upper portion of the chamber 10 is an extension 25, preferably just above the nozzle aforesaid, and whose upper or open end is adapted to be more or less closed by any suitable form of movable valve 26. This valve is shown as being a slide having a hole 26′. The slide is shown as guided for its movements by guides or flanges 27 and is adapted to be operated by any suitable means to regulate the effective size of the hole 26′ in its relation to the opening through the part 25.

In order to carry out the objects of this invention it is preferred that the valves 23 and 26 shall be operated in harmony and preferably by the same mechanism. A lever 28 is pivoted on a stud 28ª at any convenient place with respect to the chamber 10, said lever having a series of holes 28′ whereby the lever may be varied with respect to its pivotal support. At one end of said lever 28 is pivotally connected a link or bar 29 having adjustable connection at its other end at 29′ with the slide 26. By providing the bar 29 with a series of holes the position of the slide 26 may be varied with respect to the normal position of the lever 28. Likewise the other end of the lever 28 is connected by means of a link 30 to the arm 24 of the valve 23, said link 30 also having a series of holes 30′ to vary the adjustment between it and the lever 28. It will now appear that by applying power at any convenient point in any convenient manner to any suitable element of these interconnected valves and levers the entire system may be operated and the valves moved so as to maintain a certain definite relation between the amount of air blast through the nozzle 16 and the amount of fresh or atmospheric air which will be admitted through the main air port 26′. For this purpose I have shown a lever 31 pivotally connected to the lever 28 although I deem it proper to state that in this and in other matters I do not wish to be limited to any particular location or application of such working parts nor to the exact size or proportions of the component elements of the device.

As is customary in devices of this general nature I have indicated an auxiliary air inlet valve 32, normally kept seated by means of a spring 33, but adapted to be unseated by operation of a lever 34 in case an emergency should call for an excess introduction of fresh air as for instance during the starting of the engine or when operating the machine in wet weather or in high altitudes or the like.

I claim:

1. In a carbureter, the combination of a mixing chamber having an atmospheric air inlet, a main air valve controlling said inlet, a hydro-carbon inlet leading into said chamber, means for introducing a jet of air into the chamber under pressure for atomizing the hydro-carbon, a valve controlling the admission of the air under pressure, means for actuating one of the valves aforesaid, and means connecting the main air and jet pressure valves for simultaneous movement to maintain the mixture of atmospheric air and liquid fuel uniform throughout the operation of the valves.

2. In a carbureter, the combination of a mixing chamber, spraying devices within the chamber including a blast nozzle, a valve controlling the strength of the blast and thereby the quantity of liquid fuel delivered into the chamber, a slide valve controlling the amount of atmospheric air admitted into the chamber for mixture with the liquid fuel, a lever pivotally mounted upon the mixing chamber, and a pair of links connecting the opposite ends of said lever with said blast valve and slide valve respectively for positive simultaneous harmonious control of the blast valve and slide valve.

3. In a carbureter, the combination of a mixing chamber, a nozzle to introduce hydro-carbon to said chamber, a nozzle directed across the vent of the hydro-carbon nozzle, means to supply a blast of air under high pressure to and through said air nozzle to draw hydro-carbon from its nozzle and atomize the same within said chamber, a rotary valve having an arm to control the said air pressure and thereby the quantity of hydro-carbon delivered into the mixing chamber, said mixing chamber being provided with a large main atmospheric air inlet, a slide valve controlling the admission of air through the main inlet, a lever pivoted upon the wall of said mixing chamber and adjustable through its pivot as to the effective lengths of its arms, and a pair of links connected respectively to the ends of said lever and to said slide valve and the arm of said rotary valve, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

CHARLES D. HERSHBERGER.

Witnesses:
S. C. Stevenson,
W. C. Stevenson.