

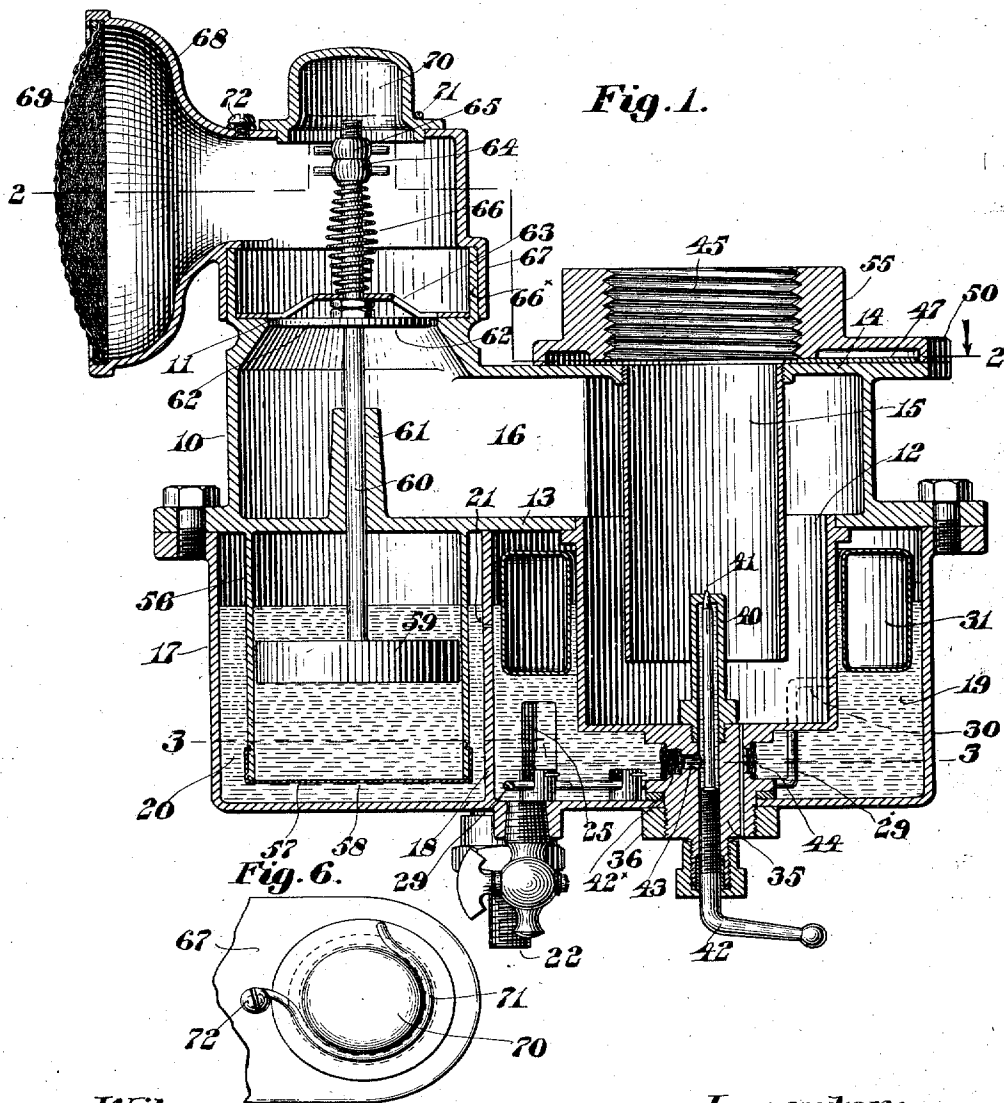
No. 829,345.

PATENTED AUG. 21, 1906.

A. W. MENNS.  
CARBURETER.

APPLICATION FILED JUNE 7, 1905.

3 SHEETS—SHEET 1.



**Witnesses:**

Nathan C. Lombard.

Edwin Hines

**Inventor:**

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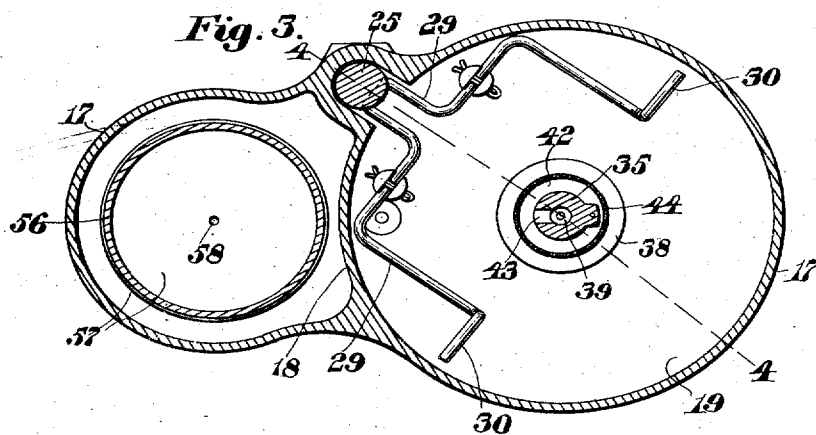
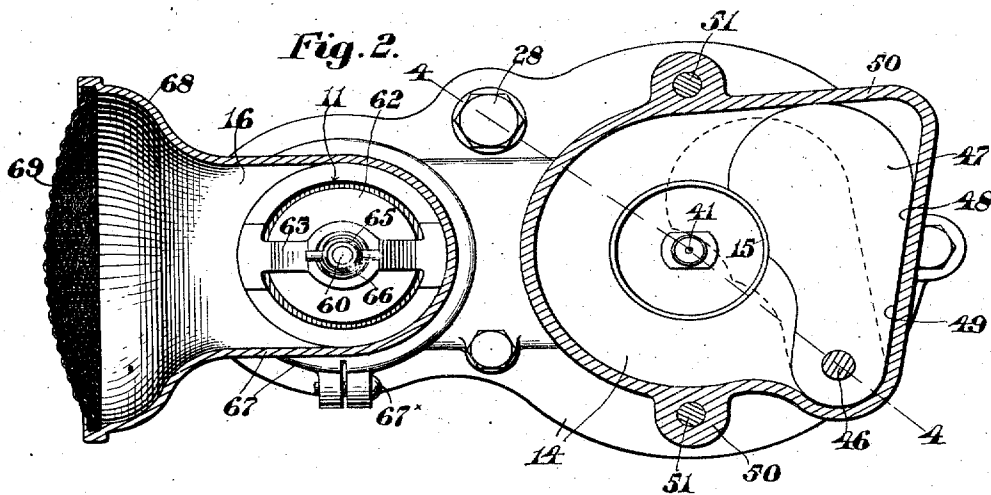
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3 SHEETS—SHEET 2.



**Witnesses.**

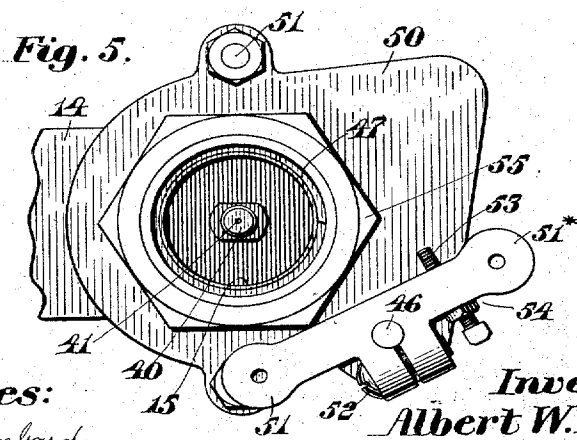
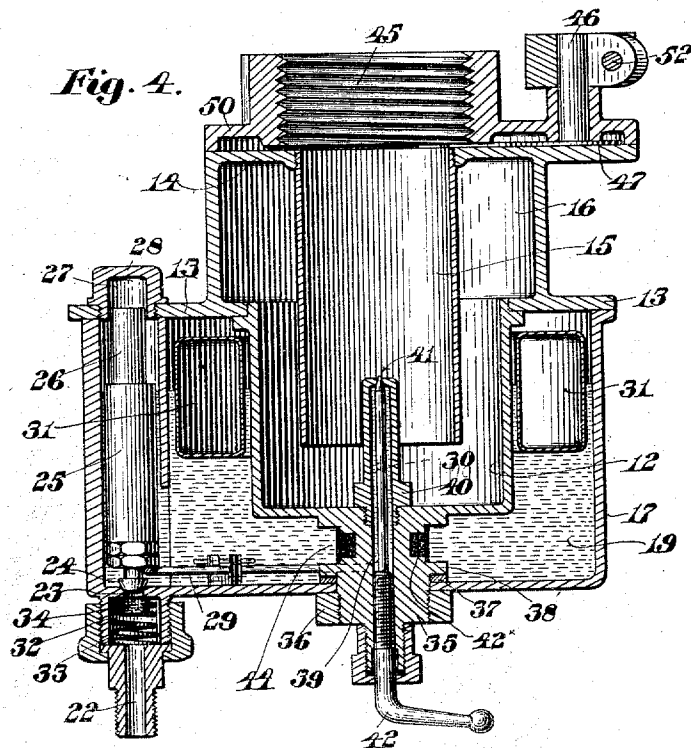
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A. W. MENNS.  
CARBURETER.  
APPLICATION FILED JUNE 7, 1905.

3 SHEETS—SHEET 3.



**Witnesses:**  
Nathan C. Lombard  
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# UNITED STATES PATENT OFFICE

ALBERT W. MENNS, OF MALDEN, MASSACHUSETTS.

## CARBURETER.

No. 829,345.

Specification of Letters Patent.

Patented Aug. 21, 1906.

Application filed June 7, 1905. Serial No. 264,078.

*To all whom it may concern:*

Be it known that I, ALBERT W. MENNS, a citizen of the United States of America, and a resident of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful improvements in Carbureters, of which the following is a specification.

This invention relates to carbureters, and has for its object the production of such a device which will be simple in construction, effective in its operation, and economical in maintenance.

The invention consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims to be hereinafter given.

Of the drawings, Figure 1 represents a vertical section of a carbureter embodying the features of this invention. Fig. 2 represents a horizontal section of the same, the cutting plane being on line 2 2 on Fig. 1. Fig. 3 represents a horizontal section of the same, the cutting plane being on line 3 3 on Fig. 1. Fig. 4 represents a vertical section on line 4 4 on Figs. 2 and 3. Fig. 5 represents a plan of the outlet end of said carbureter; and Fig. 6 represents a plan view of a portion of the inlet-casing, showing the means for securing thereto the cap giving access to the interior thereof.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 represents the main casing provided with an air-inlet 11 at one end and at its opposite end provided with a hollow cylindrical casing 12, depending from the bottom wall 13 thereof. The upper wall 14 of said casing 10 has secured thereto in an opening therein a cylindrical member 15, open at both ends and depending from said wall 14 and extending into the chamber 12 nearly to the bottom thereof. The cylinder 15 being considerably smaller than the chamber 12 an annular passage is formed around said cylinder 15, said passage communicating with the inlet-chamber 16 of the casing 10, which forms an air-passage from the inlet 11 to the inlet end of the cylinder 15. To the under face of the wall 13 of the casing 10 is secured a casing 17, provided with a parti-

tion 18, forming within said casing two compartments 19 and 20. These compartments 55 communicate with each other through a small orifice 21 in the partition 18. The intercommunicating compartments 19 and 20 form a hydrocarbon-reservoir to which hydrocarbon is admitted through the admission-pipe 22. The inlet 23 to the main compartment 19 of the hydrocarbon-reservoir is provided with a valve 24, said valve being provided in axial line therewith with a cylindrical weight 25, having an extension 26 extending into a cylindrical guide 27 in the cap 28, screwed into the upper wall 14 of the casing 10.

The cap 28 is of such a size as to permit the ready removal of the weighted valve 24 25 70 when said cap is removed from said casing. A pivoted U-shaped lever 29 extends beneath a shoulder on the weighted valve 24 25, the opposite ends 30 of which are bent upwardly and radial to the axis of the chamber 19 in position to be operated upon by a hollow float 31, surrounding the depending chamber 12. When said float 31 is in its normal position, it is slightly removed from the ends 30 80 of the U-shaped lever 29; but when the hydrocarbon contained within said reservoir 19 20 is lowered to an abnormal position the float 31 will engage with the ends 30 of said lever 29 and lift the valve 24 25 to permit an additional supply of hydrocarbon to pass 85 from the admission-pipe 22 through the inlet 23 to the reservoir 19 20. As soon as sufficient hydrocarbon has passed into said reservoir to cause the float 31 to again reach its normal position, as shown in the drawings, 90 the weight 25 will operate upon the valve 24 to cause it to again close the inlet-opening 23 and prevent further admission of hydrocarbon into said reservoir.

Beneath the inlet 23 a chamber 32 is provided in which, by means of a spring 33, a cup-shaped screen 34 is held over the inlet-opening 23. As the hydrocarbon passes through the pipe 22 to the inlet 23 it must necessarily pass through the screen 34, and 100 most of the impurities in said hydrocarbon will be prevented thereby from passing into the reservoir 19 20. The bottom of the casing 12 is provided with a boss 35 in axial line therewith, said boss passing through the bottom of the casing 17 and has threaded there-

to a nut 36, by which said casing 12 is secured in position, a packing 37 being interposed between a flange 38 and the inner wall of the bottom of said casing 17. The boss 35 is provided with an axial opening 39, extending therethrough into the interior of the casing 12 and communicating with the interior of a hydrocarbon-nozzle 40, which extends into the lower end of the cylinder or mixing-chamber 15. The nozzle 40 is provided with the usual needle-valve 41, operated by a handle 42 or any other well-known mechanism. The boss 35 is provided with an annular chamber 42\*, extending around said boss and communicating through a radial opening 43 with the interior passage 39 of said boss. The annular chamber 42\* is covered by a screen 44, through which the hydrocarbon must pass from said reservoir 19 on its way to the hydrocarbon-inlet nozzle 40.

The hydrocarbon is maintained in normal position in said nozzle 40 at a level immediately below the exit-opening therein. As the air passes rapidly through the chamber or passage 16 through the interior of the chamber formed by the casing 12 into the bottom of the cylinder 15 and passes upwardly around the nozzle 40 a suction is created which will cause the hydrocarbon to be drawn from said nozzle in sufficient quantities to thoroughly mix with the air passing upwardly in said mixing-chamber 15, and the mixture thus formed will pass through the outlet 45 to the engine. Above the wall 14 of the casing 10 is pivotally secured at 46 a plate 47, the shape of which is best shown in Fig. 2. When said plate is in its normal or open position, the rear wall 48 thereof will coact with the wall 49 of the casing 50, secured by bolts 51 to the upper wall 14 of the casing 10 and limit the outward movement of said plate 47. The pivot 46 extends upwardly through the casing 50 and has clamped thereto an arm 51\*, which may be adjusted about the axis of said pivot and clamped in any desired position by means of an adjusting-bolt 52.

The arm 51\* is provided with an adjustable member 53 and locking-nut 54, which cooperates with a projection 55 on the casing 50 to limit the inward movement of the plate 47. It is obvious that by adjusting the member 53 a greater or less closing of the outlet of said mixing-chamber may be secured.

Extending from the lower wall of the casing 10 into the compartment 20 in axial line with the inlet-opening 11 is a cylinder 56, closed at the lower end by means of a cap 57, in which is a small orifice 58, through which the hydrocarbon in said compartment 20 communicates with the interior of said cylinder. In the interior of said cylinder 56 is a piston 59, provided with a stem 60, having a bearing in a boss 61, extending up-

wardly into the passage 16, said stem being provided with a valve 62, normally closing the greater part of the inlet-opening 11.

A spider 63 extends across the inlet-opening 11 and forms a bearing for the stem 60, the outer end of which is provided with adjusting-nuts 64 65, interposed between which and said spider 63 is a spiral spring 66, by which the tension upon said piston may be regulated in an obvious manner. The upper wall 13 of the casing 10 around the inlet 11 is provided with a cylindrical extension 66, to which is nicely fitted a cylindrical casing 67, from which radiates a bell-shaped mouthpiece 68, the mouth of which is closed by means of a screen 69. The cylindrical member 67 is split and provided with ears through which a clamping-screw 67\* passes and may be adjusted in any position radial to the axis of the boss 66 to extend the mouthpiece 68 in any direction radial thereto that may be desired and clamped in such adjusted position by adjusting said clamping-screw. By this movement about the axis of the inlet-opening 11 the amount of air admitted may be nicely regulated. The upper wall of the casing 67 is provided with an opening in axial line with the piston 59 and valve 62, through which access may be secured to the nuts 64 65 for readily adjusting the tension of the spring 66 when desired. This opening is closed by a cap 70, nicely fitting said opening, said cap being held in position by means of a spring 71, passing around the same and secured to the casing 67 by means of a screw or similar member 72.

In the operation of the carbureter the nuts 64 65 are first adjusted to secure the desired tension of the spring 66 to properly operate the valve 62 and keep it normally in closed position, as indicated in Fig. 1 of the drawings. The mouthpiece 68 is then nicely adjusted about the axis of said valve to secure the desired admission of air for the suitable working of the carbureter.

As will be seen by reference to the drawings, the valve 62 does not completely close the inlet-opening 11 when said valve is in closed position; but a certain amount of air may always pass through said inlet-opening through the passage 16 and the chamber in the casing 12 to the mixing-chamber 15. When a greater amount of air passes through the mouthpiece 68 to said inlet-opening and forces the valve 62 to a greater degree of opening against the tension of the spring 66, the piston 59 will thereby be lowered in its cylinder 56, causing the hydrocarbon beneath said piston to pass through the orifice 58 and around the periphery of said piston 59 to a point above thereof. It is obvious that owing to the size of said orifice and the space between said piston and the inner wall of the cylinder the movement of said piston will be

retarded sufficiently to prevent too sudden a supply of a large amount of air that could not be utilized to advantage in the mixing-chamber and will insure a steady and regular movement of said valve. As soon as this extra supply of air has been admitted to the air-passage 16 the hydrocarbon in the reservoir 20 will again pass into the cylinder 56 and force the valve again to its seat.

Whenever it is desired to operate the nuts 64 65 to adjust the tension of the spring 66, the spring 71 may be moved about its fulcrum-pin 72 to permit the cap 70 to be removed from the opening in the casing 67, thereby permitting access through said opening to said nuts. When the piston 59 forces the hydrocarbon in the cylinder 56 through the orifice 58 into the compartment 20, the hydrocarbon in said compartment will rise and at the same time pass through the orifice 21 into the compartment 19. As this orifice 21 is smaller than the opening 58 a much slower passage of the hydrocarbon through said orifice will result.

When the air which passes through the inlet 17 enters the air-passage 16, it will pass through the annular passage between the walls of the casings 12 and 15 into the lower end of said mixing-chamber 15 and will produce a suction which will cause the hydrocarbon in the nozzle 40 to pass from the orifice therein, the amount of such hydrocarbon emitted from said nozzle being limited by the needle-valve 41 in the usual manner. The hydrocarbon in the reservoir 20, surrounding the chamber 12, is intended to maintain a level immediately below the orifice in the nozzle 40 and this level is intended to be maintained during any inclination of the carriage due to its passage over uneven surfaces. The maintenance of the hydrocarbon always at this level will prevent an excessive emission of said hydrocarbon through said nozzle.

When the float 31 does act upon the pivoted lever 29, it causes a direct lift of the valve 24 against the weight of the member 25, this member being guided to move in axial line with said valve. As soon as the float 31 has been lifted by the hydrocarbon thus admitted the valve 24 will again move in a direct line to again close the admission. The screen below the hydrocarbon-inlet prevents impurities from passing into the reservoir, and the screen surrounding the annular passage 42\* removes any impurities which may accidentally have passed into said reservoir, so that the material which passes into the mixing-chamber will be comparatively free from such impurities.

By means of the pivoted plate 47 the closing movement of which is regulated by the adjustment of the member 53, the emission of a greater or less quantity of explosive mixture

from the mixing-chamber 15 may be regulated. By this construction of a carbureter a very practical device is secured, simple in construction and very effective in its operation.

Having thus described my invention, I claim—

1. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, a cylinder therefor, and means for admitting and emitting liquid to and from said cylinder beneath said piston.

2. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, a cylinder therefor slightly larger in diameter than said piston, and means for admitting and emitting liquid to and from said cylinder beneath said piston.

3. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir consisting of two compartments communicating by a small orifice, a hydrocarbon-inlet nozzle communicating with one compartment and extending into said mixing-chamber, an air-inlet also communicating with said mixing-chamber, a valve therein, a piston secured to said valve, and a cylinder therefor depending into the other compartment of said hydrocarbon-reservoir and communicating therewith through a small orifice.

4. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir consisting of two compartments communicating by a small orifice, a hydrocarbon-inlet nozzle communicating with one compartment and extending into said mixing-chamber, an air-inlet also communicating with said mixing-chamber, a valve therein, a piston secured to said valve, a cylinder therefor depending into the other compartment of said hydrocarbon-reservoir, and a cap therefor provided with a small orifice connecting the hydrocarbon-reservoir with the interior of said cylinder.

5. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor, communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, and a cylinder therefor communicating by a small opening with the hydrocarbon-reservoir.

6. In a carbureter, the combination of a

mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, a cylinder therefor, and a cap closing the end of said cylinder and provided with a small orifice connecting

said hydrocarbon-reservoir and the interior of said cylinder.

Signed by me, at Boston, Massachusetts, this 6th day of June, 1905.

ALBERT W. MENNS.

Witnesses:

WALTER E. LOMBARD,  
EDNA C. CLEVELAND.

### DISCLAIMER.

829,345.—*Albert W. Menns*, Malden, Mass. CARBURETER. Patent dated August 21, 1906. Disclaimer filed April 21, 1916, by the patentee with the assent and concurrence of the assignee, *Findeisen & Kropf Manufacturing Company*.

Enters this disclaimer—

"To that part of the claim in said specification which is in the following words, to wit, being claims 1, 2 and 5 of the patent:

"1. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, a cylinder therefor, and means for admitting and emitting liquid to and from said cylinder beneath said piston.

"2. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, a cylinder therefor slightly larger in diameter than said piston, and means for admitting and emitting liquid to and from said cylinder beneath said piston.

"5. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor, communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, and a cylinder therefor communicating by a small opening with the hydrocarbon-reservoir."

[*Official Gazette*, May 2, 1916.]

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"2. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, a cylinder therefor slightly larger in diameter than said piston, and means for admitting and emitting liquid to and from said cylinder beneath said piston.

"5. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor, communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, and a cylinder therefor communicating by a small opening with the hydrocarbon-reservoir."

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"2. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, a cylinder therefor slightly larger in diameter than said piston, and means for admitting and emitting liquid to and from said cylinder beneath said piston.

"5. In a carbureter, the combination of a mixing-chamber, a hydrocarbon-reservoir, a hydrocarbon-inlet nozzle therefor, communicating with said mixing-chamber, an air-inlet passage also communicating with said mixing-chamber, a valve in said inlet-passage, a piston secured to said valve, and a cylinder therefor communicating by a small opening with the hydrocarbon-reservoir."

[Official Gazette, May 2, 1916.]