O. A. ECKRE.

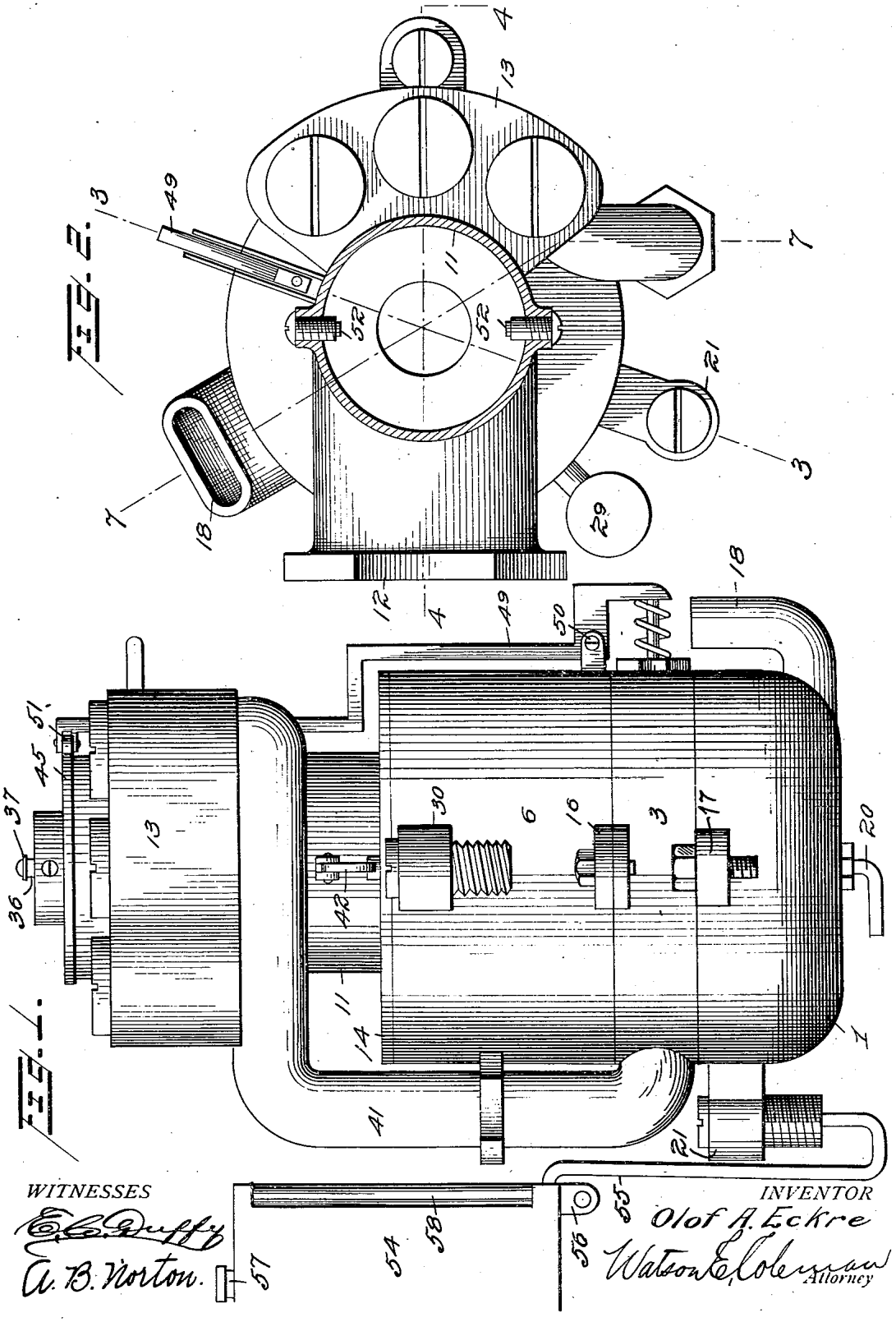
CARBURETER.

APPLICATION FILED SEPT. 28, 1912.

1,069,399.

Patented Aug. 5, 1913.

4 SHEETS—SHEET 1.



O. A. ECKRE.

CARBURETER.

APPLICATION FILED SEPT. 28, 1912.

1,069,399.

Patented Aug. 5, 1913.

4 SHEETS—SHEET 2.

FIG. 5.

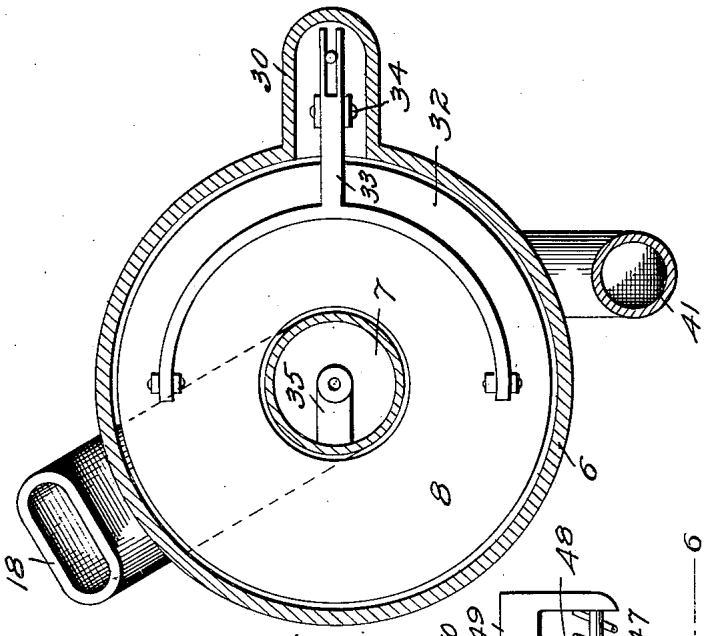
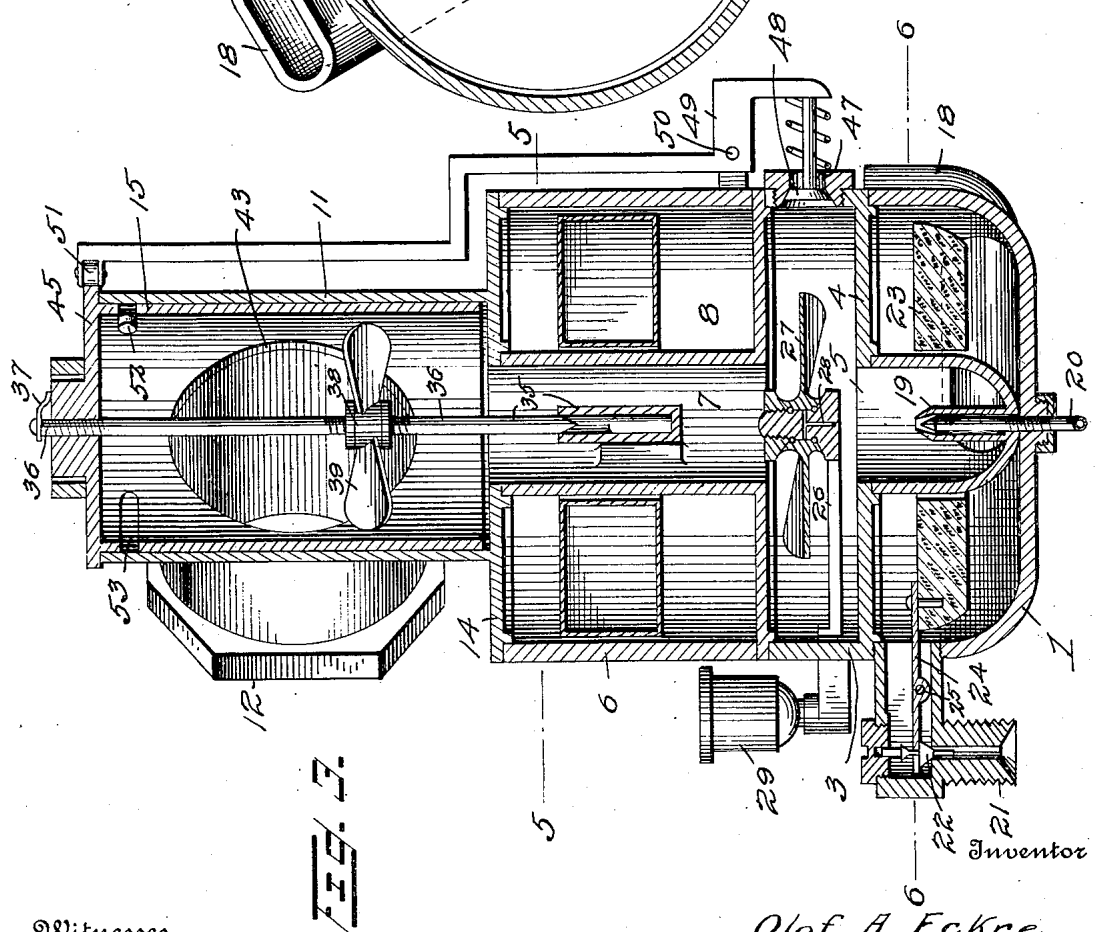


FIG. 7.



Witnesses

E. E. Duffy

A. B. Norton.

Inventor

Olof A. Eckre

By Watson E. Coleman

Attorney

O. A. ECKRE.

CARBURETER.

APPLICATION FILED SEPT. 28, 1912.

1,069,399.

Patented Aug. 5, 1913.

4 SHEETS—SHEET 3.

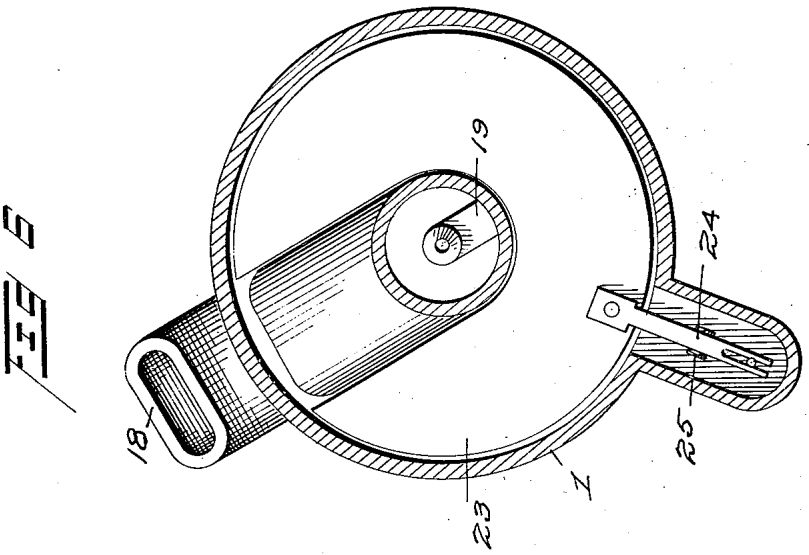


FIG. 5

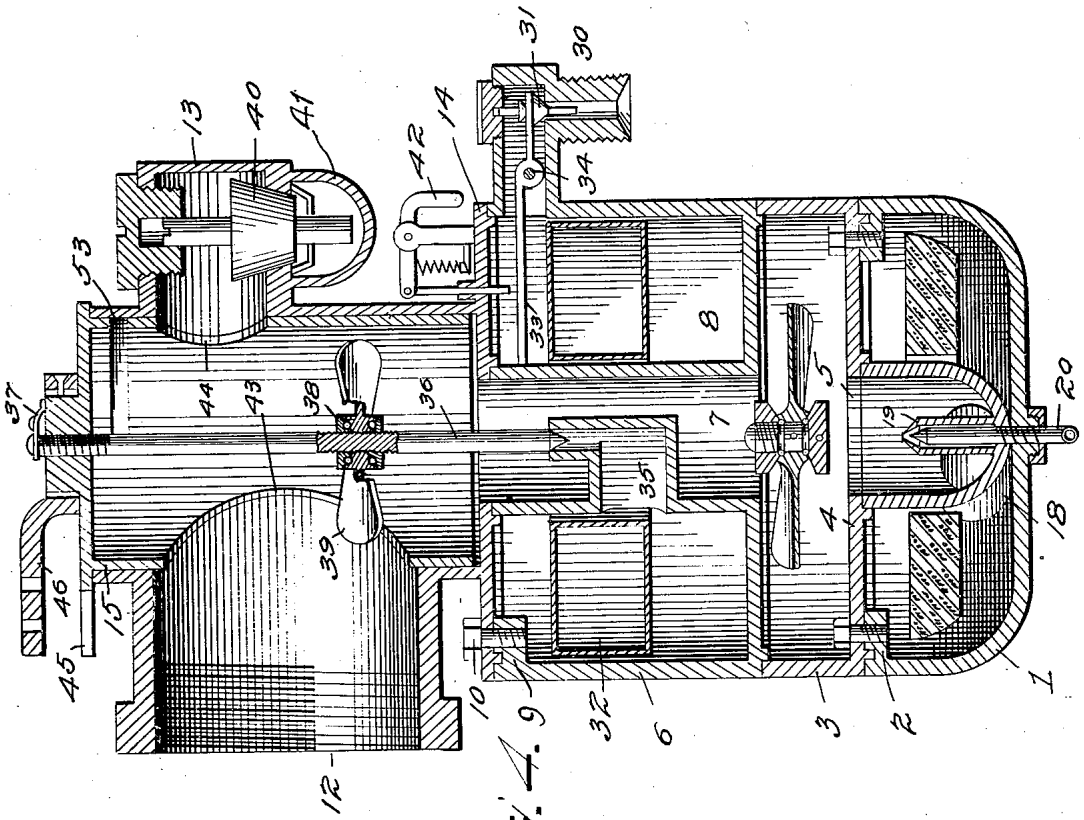


FIG. 4.

WITNESSES

A. B. Norton

INVENTOR

Olof A. Eckre

Watson E. Coleman Attorney

O. A. ECKRE.

CARBURETER.

APPLICATION FILED SEPT. 28, 1912.

1,069,399.

Patented Aug. 5, 1913.

4 SHEETS—SHEET 4.

FIG. 5.

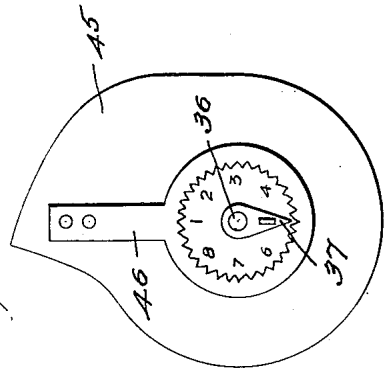


FIG. 6.

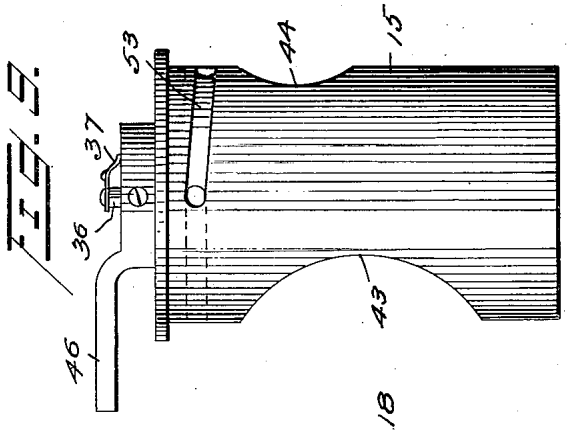
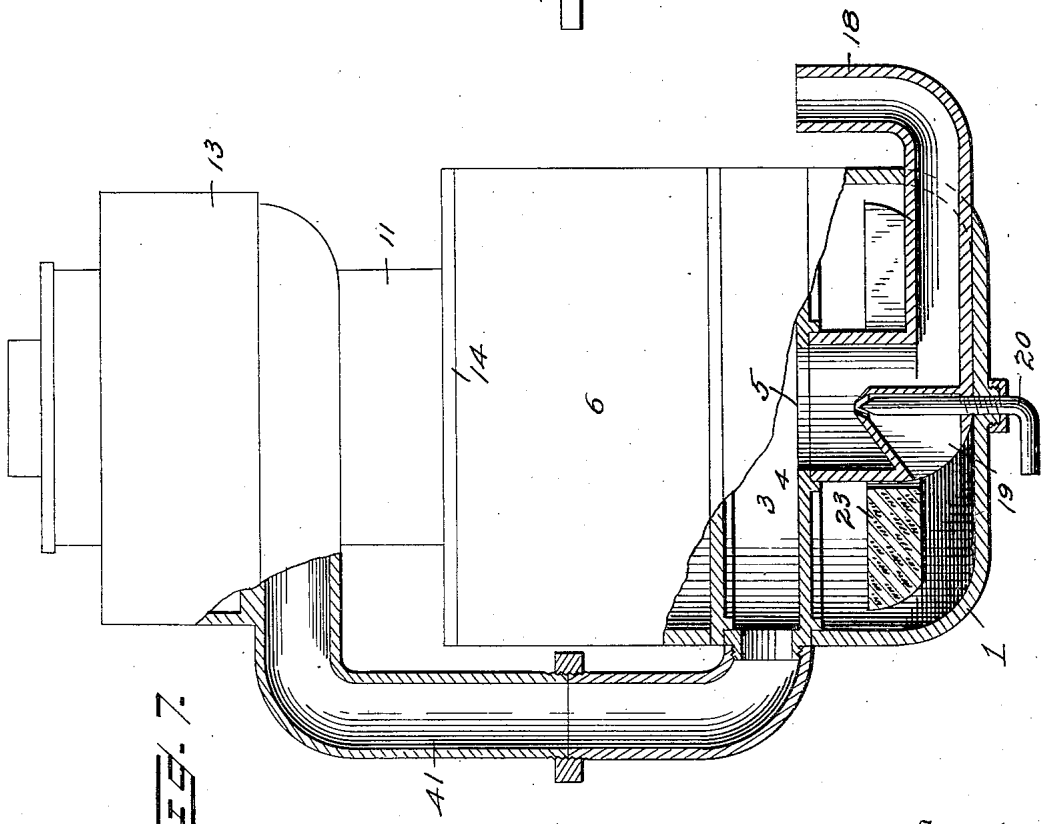


FIG. 7.



Witnesses

E. C. Decker

A. B. Norton.

Inventor

Olof A. Eckre

By Watson E. Coleman

Attorney

UNITED STATES PATENT OFFICE.

OLOF A. ECKRE, OF KINDRED, NORTH DAKOTA.

CARBURETER.

1,069,399. Specification of Letters Patent. Patented Aug. 5, 1913.

Application filed September 28, 1912. Serial No. 722,904.

To all whom it may concern:

Be it known that I, OLOF A. ECKRE, a citizen of the United States, residing at Kindred, in the county of Cass and State of North Dakota, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to carbureters and more particularly to certain new and useful improvements in mechanism for forming, controlling, and delivering charges of explosive mixture to internal combustion engines, and the primary object of the present invention is to provide for the delivery of a uniform mixture of air supercharged with water which is thoroughly mixed together and drawn in a constricted current across the fuel inlet and then to dilute this mixture to the desired extent before delivering it to the engine.

A further object of the present invention is to provide a carbureter of this character with a main air inlet through which the air is drawn to a mixing chamber and is then mixed with water vapor and then drawn across the fuel intake into the intake port of the engine, which is also provided with auxiliary air intake ports the said auxiliary air intake ports being in communication with the mixing chamber to automatically supply a larger volume of air to the engine as the speed thereof increases.

A still further object of the present invention is to provide a carbureter of the class aforesaid having an auxiliary intake port within the mixing chamber thereof which is automatically controlled by the throttle valve as the speed of the engine increases.

With the above and other objects in view, this invention consists of the novel details of construction, combination, formation and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved carbureter embodying my invention. Fig. 2 is a plan view of the same with the valve removed. Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2. Fig. 4 is a vertical section taken on the line 4—4 of Fig. 2. Fig. 5 is a horizontal section taken through the fuel chamber. Fig. 6 is a horizontal section taken through the water chamber as seen on line 6—6 of Fig. 3. Fig. 7 is a section taken on the line 7—7 of Fig. 2 but illustrating portions of the carbureter in elevation. Fig. 8 is a plan view of the valve and Fig. 9 is a side elevation of the same.

Reference now being had to the accompanying drawings wherein corresponding parts are designated by like numerals throughout the several views, the casing in which the mechanism employed in the present invention is mounted, comprises four sections. The lower section 1 is substantially cup-shaped and provides a reservoir for receiving the water to be mixed with the air, which will be hereinafter fully described. The upper end of this lower section is provided with a flange 2 to which is connected the adjacent section 3. This section comprises a cylindrical portion having a partition 4 formed at the lower edge thereof, and which is provided with an opening 5 forming a communication from the passageway through which the air passes. The next adjacent section, indicated by the numeral 6, is substantially cylindrical and of greater height than the last mentioned section and is provided with a central bore 7. This section is also provided with a reservoir 8 in which the fuel is kept before the same is mixed with the air when directing the same to the intake valve of the engine. The upper end of this section 6 is provided with a flange 9 to which is secured by means of bolts 10, the upper section 11. This upper section 11 is provided with an exhaust port 12 which is in communication with the intake pipe of the engine and is also provided with an extension 13, having mounted therein auxiliary air inlet ports, which will be hereinafter more fully described. The lower extremity of the upper section 11 is provided with a flange 14 which rests upon the upper end of the inner wall of the section 6, whereas the upper end of this section is open and has mounted therein a turning valve 15. The sections 3 and 6 of the casing are provided with laterally extending lugs 16 which are bolted together to form a suitable connection therebetween. The lower section 1 is provided with a pair of laterally extending apertured lugs 17 which may be secured to a support or the framework of the automobile in any preferred or well known manner.

The lower section 1 of the casing is provided with an opening through which extends a U-shaped pipe 18 which forms the main air intake duct, its inner end being in communication with the opening 5 formed within the section 3. This U-shaped pipe 18 is provided with a depressed portion 19 having a restricted opening formed in the upper end thereof which communicates with the water reservoir. A needle valve 20 is adjustably mounted within this section 1 and is adapted to operate within the opening formed within the depressed portion 19 whereby the proper amount of water may be permitted to enter through the opening within the mixing chamber.

The water reservoir formed within the lower section 1 of the casing is provided with an intake port 21 in which is mounted a valve 22. This valve 22 is controlled by a U-shaped float 23, mounted within the reservoir by means of a lever 24, the latter being pivotally mounted, as at 25, within the intake port.

The interior of the section 3 of the casing forms a mixing chamber for mixing the water and air as they are directed thereto, and to provide means for mixing the air and water, I mount within the section 3 an arm 26 which has rotatably mounted thereon, a fan 27. This fan is provided with ball bearings to permit the same to rotate freely, and the said bearings are in communication by means of a passageway 28 with an oil cup 29, which is mounted on said section 3 and extends exteriorly thereof. The section 6, which is provided with a fuel reservoir, has formed therein an intake port 30 which is in communication with a suitable source of supply. This intake port 30 is provided with a valve 31 which is connected to an aluminum float 32 mounted within the reservoir 8 by means of a Y-shaped lever 33. This lever being pivotally mounted, as at 34, within the intake port, thereby provides means for regulating the flow of gasolene within the reservoir 8 at the same time keeping the fuel at the desired height therewithin. The interior of this section 6 is provided with an L-shaped extension 35 which extends within the bore 7 and has a valve seat formed in the upper end thereof for receiving a needle valve 36 which is adapted to control the flow of gasolene or fuel to be mixed with the air and water as it passes through the bore 7. This valve 36 is detachably mounted within the upper end of the turning valve 15 and has secured to the upper end thereof a pointer 37, which is adapted to coöperate with the graduations formed upon the top of the valve, so that the operator can readily see the exact amount of fuel which is being mixed with the water and air prior to its entering the intake port of the engine. The lower portion of this valve is threaded, and has adjustably mounted thereon a bearing 38 the latter having loosely connected thereto a fan 39, which obviously thoroughly mixes the fuel and moistened air before the same enters the intake port of the engine.

The extension 13 formed upon the upper section 11 of the casing, is provided with a plurality of openings in which are adapted to operate weight valves 40. These openings formed within the extension 13, are in communication with an auxiliary supply pipe 41 which is in communication with the mixing chamber formed within the section 3 of the casing. A priming lever 42 is mounted upon the section 11 and is provided with a link which is adapted to engage the Y-shaped lever 33. The turning valve 15 is provided with a depending flange in which is formed an opening 43 which communicates with the exhaust port 12 and a similar port 44, which is in communication with the auxiliary air intake. The upper portion of the turning valve 15 is provided with an enlarged cam head 45 and also has a lever 46, by which the turning valve may be operated in the usual manner.

The mixing chamber, formed within the section 3 of the casing is provided with an auxiliary air intake port 47 which has mounted therein a spring actuating valve 48. An angular shaped lever 49 is pivotally mounted, as at 50, upon the section 6 of the casing and its lower end is adapted to rest against the stem of said spring actuated valve 48, whereas its opposite end is provided with a roller 51 which is adapted to operate upon the cam head formed upon the flange of the turning valve 15.

It is obvious from the foregoing description, taken in connection with the accompanying drawings, that when the engine is started, it will draw the air and a proper amount of water into the carbureter, which are thoroughly mixed by means of the fan 27, and they are then drawn from the fuel intake port in a constricted current where the moistened air and fuel are then thoroughly mixed by the fan 39 and then directed to the intake ports of the engine. Upon increasing the speed of the engine, the turning valve is rotated until the cam 45 comes in contact with the lever 49 which opens the spring actuated valve 48, thereby allowing a greater volume of air to enter the mixing chamber, and upon the increased speed of the engine, the suction created thereby, will open the valves 40, thereby permitting a larger volume of the water and air to enter the intake port of the engine.

The section 11 has formed, adjacent the head thereof, a pair of inwardly extending studs or the like 52 which are adapted to operate within a pair of slots 53 formed in opposite sides of the turning valve 15 and

this connection between the section 11 and the turning valve affords a means for holding the latter in the carbureter.

It will be noted that when the valve 15 is rotated, the set screws will ride within the slots 53 thereby causing the valve to rise when the opening 43 comes in alinement with the exhaust port 12 as the slots 53 are inclined downwardly as shown clearly in Fig. 9 of the drawing. As the valve rises, it also carries the stem 36 with it thereby opening the fuel inlet valve to permit a greater volume of fuel to enter the carbureter when the speed of the engine is increased.

The aforesaid water intake pipe 21 is in communication with the supply tank 54 by means of a tubing 55. This supply tank is provided with brackets whereby the same will be mounted upon any suitable support or the framework of an automobile and is provided with a filling opening. This tank may also be provided with a gage 58 by which the correct amount of water contained within the tank will be indicated.

What I claim is:—

1. In a carbureter, an air inlet, an air moistening chamber, a carbureting chamber, and means for by-passing a portion of the moistened air around said carbureting chamber.

2. In a carbureter, an air inlet, an air moistening chamber, a carbureting chamber, an auxiliary air inlet, beyond the latter chamber, and an independent communicating means between the last mentioned inlet and said air moistening chamber.

3. In a carbureter, an air inlet, an air moistening chamber, a carbureting chamber, an exhaust port for the mixture, an auxiliary air inlet arranged adjacent said exhaust port, and independent communicating means between the air moistening chamber and said auxiliary air inlet.

4. In a carbureter, an air inlet, an air moistening chamber, a carbureting chamber, an exhaust port for the mixture, an auxiliary air inlet arranged adjacent the exhaust port, independent communicating means between said air moistening chamber and the auxiliary air inlet, and a turning valve cooperating with the auxiliary air inlet and exhaust port.

5. In a carbureter, an air inlet, an air moistening chamber, a carbureting chamber, an exhaust for the mixture, an auxiliary air inlet disposed adjacent said exhaust, means for by-passing a portion of the moistened air around said carbureting chamber to the auxiliary air inlet, and a valve cooperating with said auxiliary air inlet and the exhaust port.

6. In a carbureter, an air inlet, an air moistening chamber, a carbureting chamber, an exhaust for the mixture, an auxiliary air inlet disposed adjacent said exhaust, means for by-passing a portion of the moistened air around said carbureting chamber to the auxiliary air inlet, a valve coöperating with said auxiliary air inlet and the exhaust port, and means in connection with said valve for controlling the flow of air and fuel respectively to said air moistening and carbureting chambers.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

OLOF A. ECKRE.

Witnesses:
R. W. ROUSSEAU,
M. R. LANCASTER.