W. C. CARTER.

CARBURETER.

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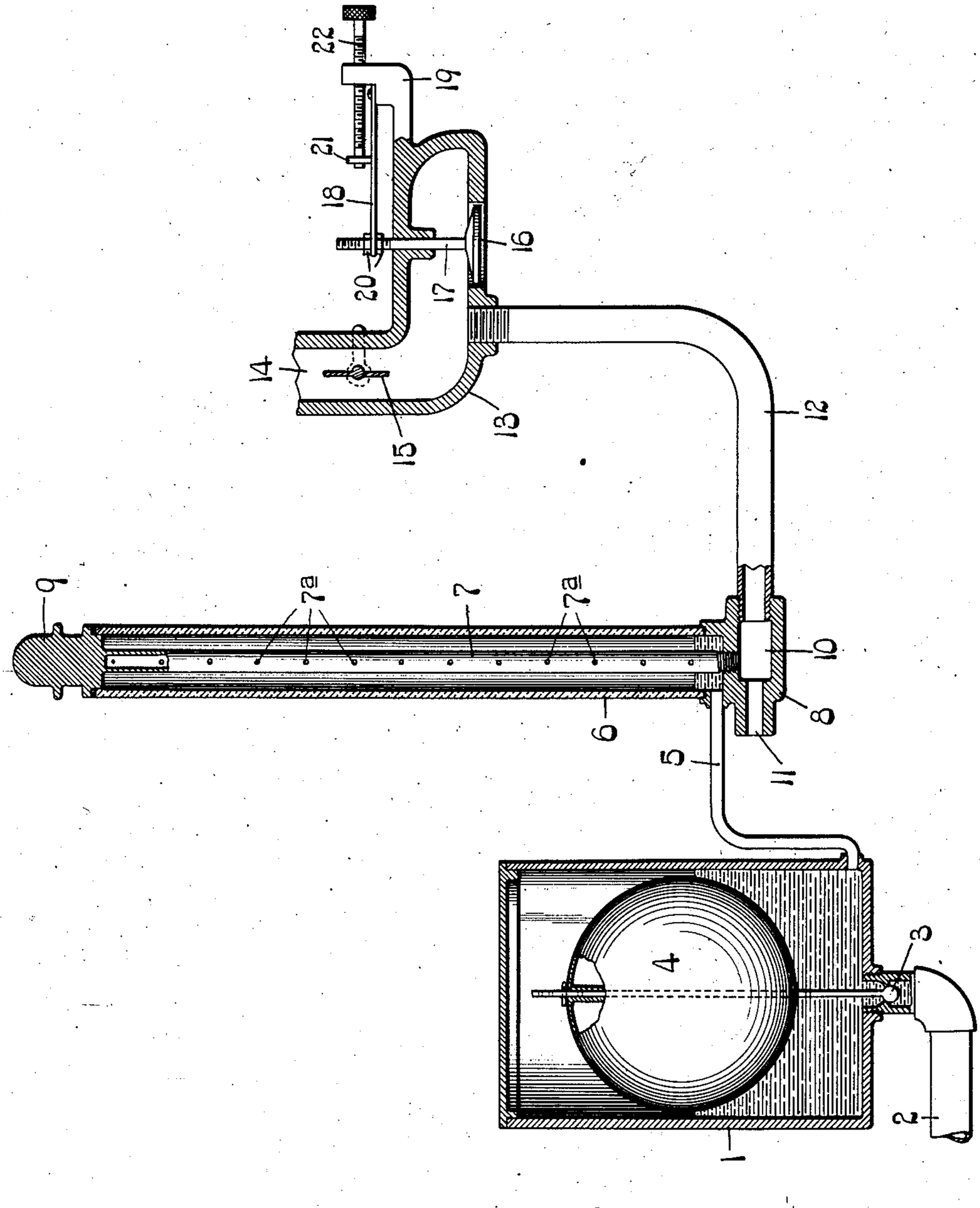
973,755. Patented Oct. 25, 1910.



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WILLIAM C. CARTER, OF ST. LOUIS, MISSOURI.

CARBURETER.

973,755. Specification of Letters Patent. Patented Oct. 25, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM C. CARTER, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Carbureters, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which the figure is a vertical sectional view of a carbureter constructed in accordance with my invention.

This invention relates to carbureters, and particularly to that type which are used on internal combustion engines.

One object of my invention is to provide a carbureter which is so constructed that the quantity of fuel supplied to the mixing chamber will vary automatically as the speed of the engine varies.

Another object of my invention is to provide a carbureter which is so constructed that the quantity of fuel supplied to the mixing chamber can be governed and controlled by simply adjusting the air inlet valve of the mixing chamber.

Other desirable features of my invention will be hereinafter described.

Briefly described, the preferred form of my invention as herein shown comprises a hollow member or receptacle that communicates with a float tank containing fuel, a tubular-shaped member arranged inside of said receptacle and provided with a plurality of separated ports or holes through which the fuel in said receptacle is adapted to flow, and a conduit communicating with said tubular-shaped member and leading to a mixing chamber that is provided with an air inlet valve. When the piston in the cylinder of the engine operates, a suction will be created in the mixing chamber and this suction produces a partial vacuum in said receptacle, thereby causing the fuel therein to rise and thus flow through the ports in the tubular-shaped member into the conduit which conducts the fuel to the mixing chamber. The ports or openings in said tubular-shaped member are so disposed that more fuel will flow into the conduit as the level of the fuel raises, and as the level of the fuel is controlled by the force of the suction in the mixing chamber, it will be obvious that more fuel will be supplied automatically to the mixing chamber as the speed of the engine increases.

The air inlet valve of the mixing chamber is controlled by a spring, and means is provided for changing the tension of said spring so as to govern the quantity of air that is drawn into the mixing chamber. The amount of air sucked into the mixing chamber varies the force of the suction produced in said mixing chamber by the strokes of the piston so that I am able to control the quantity of fuel which is supplied to the mixing chamber by simply adjusting the air inlet valve of said mixing chamber.

Referring to the drawings which illustrate the preferred form of my invention, 1 designates a float tank to which fuel is supplied by means of a pipe 2 leading from a fuel tank, not shown. A valve 3 controls the admission of fuel to the float tank and said valve is operated by means of a float 4 of any preferred design. A pipe 5 leads from the lower end of the float tank to a hollow member or receptacle 6 for conducting fuel into said receptacle, and a perforated member 7 that connects with the mixing chamber of the carbureter is arranged inside of the receptacle 6. The receptacle 6 preferably consists of a glass tube that is closed at its lower end by a casting 8 into which the pipe 5 extends, and the upper end of said tube is closed by a cap 9 which also forms a closure for the upper end of the tubular-shaped member 9, the lower end of the member 7 extending into a carbureting chamber 10 in casting 8. The chamber 10 is provided with an air supply port 11 leading to the atmosphere, and a conduit 12 connects said chamber with a mixing chamber 13 having an outlet 14 leading to the cylinder of the engine, said mixing chamber being provided with a throttle valve 15 and an air inlet valve 16 that is held closed by means hereinafter described.

The tubular-shaped member 7 is provided with a plurality of separated ports or openings 7^a so that a partial vacuum will be produced in the receptacle 6 when a suction is created in the conduit 12 that communicates with the lower end of the tubular-shaped member 7. This partial vacuum in the receptacle 6 causes the liquid fuel in said receptacle to rise and as it rises it flows into the tubular-shaped member 7 through the ports 7^a in said member and is then drawn up into the mixing chamber 13 through the

conduit 12. The air inlet valve 16 of the mixing chamber is provided with a stem 17 having a screw-threaded portion that passes through an opening in one end of a leaf spring 18 which is connected at its opposite end to an extension 19 on one wall of the mixing chamber. Nuts 20 that are arranged on the upper and underneath sides of the spring 18 operate to connect said spring to the stem of the valve and also enable said valve to be adjusted relatively to the spring to position it properly in the port that it closes.

For varying the tension of the spring 18 I have provided a device 21 that bears upon the upper side of the spring, said device being swiveled on one end of a screw 22 that passes through a screw-threaded opening in the extension 19. By adjusting said screw the device 21 can be moved toward and away from the outer end of the spring and thus vary the tension of the spring. When the device 21 is located close to the outer end or free end of the spring, more force will be required to open the valve than when said device is located close to the inner end of the spring; namely, that end which is connected to the extension 19. Consequently, I can control the quantity of air that is sucked into the mixing chamber by simply adjusting the screw 22 so as to change the position of the member 20 on the spring 18.

Having described the construction of my improved carbureter, I will now describe the operation of the same: The float 4 in the tank 1 keeps the fuel in said tank at a certain level and when the throttle valve 15 is closed the fuel in the receptacle 6 will remain at the same level as the fuel in the float tank. The ports 7^a in the tubular-shaped member 7 are so disposed that the lowest port is located above the normal level of the fuel in the receptacle 6 so that when the throttle valve is closed no fuel will flow into the carbureting chamber 10 in the casting 8. When the throttle valve is open the movement of the piston in the cylinder creates a suction in the mixing chamber, thereby opening the inlet valve 16 so as to draw air into the mixing chamber and also creating a partial vacuum in the receptacle 6. This partial vacuum causes the fuel in said receptacle to rise and as it rises it flows through the ports 7^a in the member 7 down into the chamber 10 and is then drawn up through the conduit 12 to the mixing chamber where it mixes with air to form a charge that is drawn into the cylinder. As the speed of the engine increases, the suction in the mixing chamber becomes greater so that the fuel in the receptacle 6 rises higher and thus covers a greater portion of the tubular-shaped member 7. More ports in said member 7 are thus brought into service and consequently more fuel will be drawn into the mixing chamber. As the quantity of fuel that is drawn into the mixing chamber is governed or controlled by the force of the suction in said mixing chamber, it will be obvious that I can govern accurately the supply of fuel to the mixing chamber by simply adjusting the air inlet valve so as to reduce or increase the force of the suction in said mixing chamber.

The fuel in the receptacle 6 does not remain at the same level as the fuel in the tank 1 but varies as the suction in the mixing chamber varies, the fuel in the receptacle 6 rising gradually a- the suction increases and thus bringing more of the ports 7^a in the member 7 into service so that a greater number of jets of fuel are supplied to the air mixing chamber. The hollow perforated member of my improved construction which governs the introduction of the fuel to the point where it mixes with the air may be said to form a multiple jet for as the fuel rises more of the ports in said member are brought into service and consequently more fuel will be drawn into the mixing chamber.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A carbureter comprising a vertically disposed tubular-shaped receptacle closed at both ends, means for supplying liquid fuel to the lower end of said receptacle, a member at the lower end of said receptacle provided with a carbureting chamber that communicates with the atmosphere, a multiple jet tube arranged in said receptacle and communicating with said carbureting chamber, a conduit leading from said carbureting chamber to the mixing chamber of the carbureter.

2. A carbureter comprising a vertically disposed tube, a member closing the lower end of said tube and provided with a carbureting chamber which communicates with the atmosphere, means for supplying liquid fuel to the lower end of said tube, a multiple jet tube arranged in said vertically disposed tube and having its lower end communicating with said carbureting chamber, means for closing the upper ends of both tubes, and a conduit leading from said carbureting chamber to the mixing chamber of the carbureter.

3. A carbureter comprising a vertically disposed glass tube, a casting at the lower end of said tube which acts as a closure for same, said casting being provided with a carbureting chamber that communicates with the atmosphere, a multiple jet tube arranged in said glass tube and screwed into said casting in such a manner that communication is established with the carbureting chamber, a cap on the upper end of the jet

tube that closes same and also acts as a closure for the glass tube, means for supplying liquid fuel to the lower end of said glass tube, and a conduit leading from the carbureting chamber in said casting to the mixing chamber of the carbureter.

4. A carbureter comprising a vertically disposed tube closed at its opposite ends, means for supplying liquid fuel to the lower end of said tube, a multiple jet tube arranged in said vertically disposed tube, a member provided with a carbureting chamber with which the lower end of said jet tube communicates, said carbureting chamber being provided with an air supply port, a mixing chamber, a conduit leading from said carbureting chamber to said mixing chamber, a valve for supplying air to the mixing chamber, a leaf spring for holding said valve seated, and an adjustable device for varying the tension of said leaf spring.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this eighth day of February 1908.

WILLIAM C. CARTER.

Witnesses:
WELLS L. CHURCH,
GEORGE BAKEWELL.