W. F. SCHULZ.

CARBURETER.

APPLICATION FILED APR. 24, 1908.

1,010,185. Patented Nov. 28, 1911.

Fig. 1.

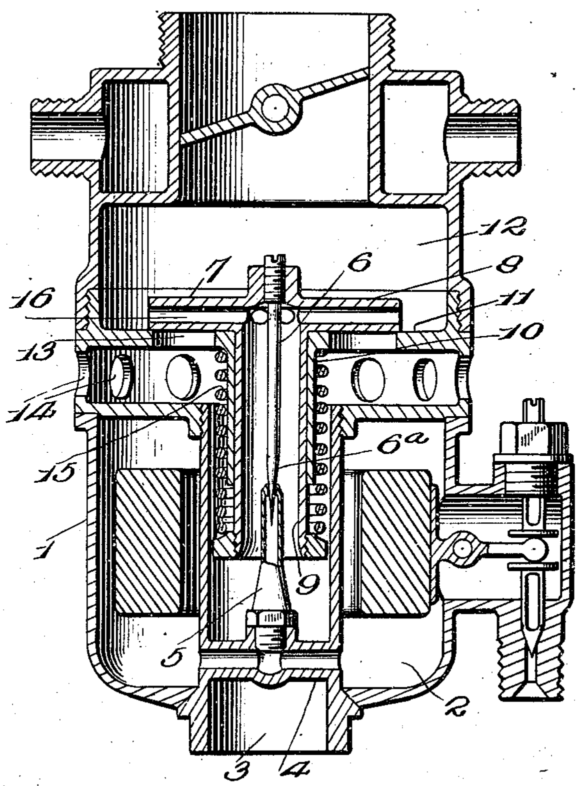


Fig. 3.

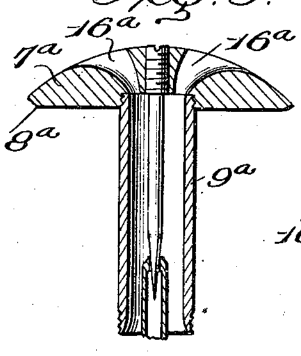


Fig. 2.

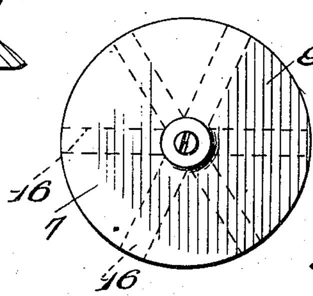
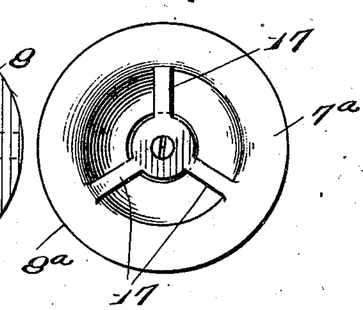


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,010,185. Specification of Letters Patent. Patented Nov. 28, 1911.

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To all whom it may concern:

Be it known that I, WALTER F. SCHULZ, citizen of the United States, residing at Corona, in the county of Queens and State of New York, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention comprehends certain new and useful improvements in carbureters for internal combustion engines or motors using gasolene or other volatile fuel, and the invention has for its object a very simple and efficient construction of this character designed to procure practically constant conditions for carburization or vaporization under all engine conditions and speeds, the invention consisting in certain constructions, arrangements, and combinations of the parts that I shall hereinafter fully describe and then point out the advantageous results attained by the invention, concluding finally with the novel combinations and arrangements of parts in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:—

Figure 1 is a vertical sectional view of a carbureter embodying the invention; Fig. 2 is a detail top plan view of one form of admission and mixing valve that may be employed; Fig. 3 is a detail sectional view of another form of valve; and, Fig. 4 is a detail top plan view of the valve illustrated in Fig. 3.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawing, the numeral 1 designates the base or lower end of the carbureter cylinder or casing, which may be of any desired construction or design and which embodies a float cylinder 2 which preferably surrounds the air-inlet passage 3.

4 designates a transversely extending hollow web which intersects the air passage 3 and which communicates with the float chamber 2, as shown. The inspirator nozzle 5 is mounted upon this web 4 and projects upwardly centrally of the air passage 3, the induction tip being controlled by the lower tapered end 6^a of the needle valve 6, said valve being connected at its upper end by an adjustable mounting to the laterally extended cap 7 of an admission valve 8. The valve 8 is approximately of mushroom shape, having a hollow depending stem 9 mounted for longitudinal movement in the depending sleeve 10 which projects downwardly into the air passage 3 from the bottom wall 11 of the mixing chamber 12, the said sleeve being spaced from the surrounding wall of the passage 3, as clearly illustrated in Fig. 1.

The hollow stem 9 of the valve 8 is designed to inclose or encircle at its lower end the upper end of the inspirator nozzle 5, and the cap 7 of the valve is designed to be seated upon the bottom wall 11 of the mixing chamber 12, so as to control the air inlet ports 13 that are formed in said bottom wall and that communicate with the air chamber below such wall, such chamber being in open communication with the atmosphere, as by the annular series of ports 14.

A spring is employed to exert a tension on the valve 8 in a direction to close the same, and in the present instance, said spring, designated 15, encircles the sleeve 10 the lower end of the spring bearing against a collar screwed or otherwise secured to the lower end of the hollow stem 9 of the said admission valve. It is to be understood that the spring 15 is of such a length and is so constructed and arranged that it will exert a uniform tension at all times upon the valve.

The cap 7 of the admission valve 8 is formed with any desired number of radial passages 16 which establish communication between the interior of the hollow stem 9 and the interior of the mixing chamber 12 that leads to the engine or motor. It is to be understood that the admission valve 8 is opened by the suction of the piston in the engine cylinder in the usual way.

In the practical operation of my improved carbureter, the gasolene or other hydrocarbon will be drawn in through the inspirator nozzle 5 and will be mixed with the air drawn in through the passage 3 and hollow valve stem 9, air also being drawn into the mixing chamber 12 through the ports 14 and 13 when the admission valve 8 is opened. It is to be understood however that it is not necessary to lift the admission valve 8 in order to operate up to a certain speed, as a certain quantity of air can always enter the mixing chamber whether the

valve is lifted or not, provided of course the throttle is open sufficiently to allow the air to pass to the engine.

From the foregoing description in connection with the accompanying drawings, it will be seen that I have provided an improved construction of carbureter which embodies a valve held down by a spring of practically even tension throughout the limits of its motion in operation, and in which carbureter there is always maintained a constant atmospheric pressure owing to the fact that the mixing chamber 12 is always open to the admission of air, and even if the mixing chamber 12 were not at all times in open communication with the atmosphere, it is obvious that these constant conditions would still maintain, by the fact that the constant atmospheric pressure outside is resisted by a spring of practically even tension. Hence by my construction and arrangement of parts, I provide means for securing practically or approximately, 1st, a constant velocity of air passing into the mixing chamber; 2nd, a constant proportion of opening as between the inspirator nozzle and the total air-inlet; and 3rd, the proportion of opening always being proportionate to the speed of the motor.

By "total air-inlet" is meant not only the air-inlet opening through the hollow valve stem and radial passages 16 but also the opening around or past the cap of the valve provided for by the inlet ports 13 and the open communication between the air chamber and the atmosphere which that is provided for, in the present instance, by the ports 14.

It is to be understood that my invention is not limited to any specific form of admission valve, or to any details of construction and arrangement of parts, except as defined in the following claims. For instance, Figs. 3 and 4 illustrate another form of admission valve that may be employed, the valve 8^a being constructed with a cap 7^a formed with webs 17, the spaces between which constitute openings 16^a in communication with the interior of the hollow stem 9^a, the openings 16^a being similar in function to the openings 16 shown in Fig. 1 and indicated in Fig. 2.

Having thus described the invention, what is claimed as new is:

1. A carbureter having a mixing chamber formed with an air inlet port, a fuel inlet passage open at both ends and communicating at one end with the outer air and at its other end communicating with said mixing chamber, said air passage having imperforate walls, an inspirator located in the air passage, a suction valve controlling the admission of air through the air port, and a spindle movable with the valve and depending therefrom into the air passage, said spindle controlling the outlet from the inspirator.

2. A carbureter having a mixing chamber provided with air inlet ports in its wall communicating with the outside air, a valve controlling and normally closing said ports, an inspirator nozzle, an air passage imperforate and continuous throughout its length surrounding the inspirator nozzle and having an unobstructed opening at both ends, said passage being of constant area at all times, one end of the passage communicating with the mixing chamber and the other end surrounding and spaced from the inspirator nozzle, said air passage being separated from and entirely independent of the air inlet ports in the wall of the mixing chamber, and a spindle carried by the air inlet valve extending through said passage and into the inspirator nozzle and controlling the passage of fuel from said inspirator in proportion to the opening of the air controlling valve.

3. A carbureter provided with a mixing chamber having a series of ports communicating with the outer air and a centrally arranged air passage, an inspirator mounted in said passage, connected to a source of fuel supply, a hollow valve in the mixing chamber, having openings communicating with the interior of the mixing chamber and controlling the inlet of air through said ports, a tubular valve stem on said valve, extending down into the air passage, and an adjustable spindle carried centrally within said tubular stem of the valve and controlling the admission of fuel through said inspirator.

4. A carbureter provided with a mixing chamber having a central air passage extending from it and a series of concentrically arranged air ports surrounding said passage, an inspirator located in said passage and connected to a source of fuel supply, a hollow valve in the mixing chamber adapted to control the inlet of air through said ports, a tubular valve stem extending from said valve into the air passage, a spring normally holding the valve to its seat against said ports, and a spindle carried by the valve and extending down through the tubular stem thereof and controlling the inlet of fuel through said inspirator.

5. A carbureter having a mixing chamber in its upper part, formed with ports communicating with the outside air and having a central, downwardly extending air passage, a float chamber surrounding the air passage, a float fitting therein, an inspirator located centrally in said passage and communicating with the float chamber, a puppet valve in the mixing chamber, closing against said ports to prevent the admission of air, said valve being hollow and having passages communicating with the exterior of

the valve, a tubular stem on the valve, extending down into the passage, a spring acting against the stem to hold the valve in place, and an adjustable spindle mounted on the valve and projecting down into the tubular stem and engaging with the inspirator to control the supply of fuel thereto.

6. In a carbureter, a mixing chamber having a series of air inlet ports communicating with the outside air, a central air inlet passage extending from the mixing chamber, said passage being imperforate and continuous along its entire length and communicating at one end with the mixing chamber and at its other end connected to a source of air supply, the opening at both ends of the passage having a constant area at all times, said air passage being spaced from the air inlet ports in the mixing chamber, a valve located in the mixing chamber and controlling said air inlet ports, said valve permitting a varying amount of air to enter the mixing chamber therethrough, an inspirator located within the air passage, and means carried by the valve and movable with it for variably controlling the amount of fuel entering the air passage through the inspirator.

7. A carbureter having a mixing chamber, the wall of which is provided with a plurality of air inlet ports, a tubular imperforate extension forming an air passage and projecting from the mixing chamber and open at both ends, the end of the extension opposite to the mixing chamber communicating with a source of air, the other end of the extension communicating with said mixing chamber, a valve located within the mixing chamber and controlling the inlet of air through the inlet ports, said valve having passages leading to its interior and opening upon the exterior of the valve, a tubular valve stem opening into said passages and having sliding engagement with the walls of the air passage, an inspirator nozzle connected to a source of fuel supply and extending up into the hollow stem, and a spindle carried by the valve and extending down through the hollow stem thereof and controlling the passage of fuel through the inspirator nozzle.

8. A carbureter having a mixing chamber provided with air inlet ports, an inspirator, a passage having a wall imperforate and continuous for its entire length surrounding the inspirator and communicating at one end with the mixing chamber and at the other end communicating with the outside air beyond the mouth of the inspirator, said passage being separated from the air inlet ports of the mixing chamber and being adapted to carry a charge of fuel from the inspirator to the mixing chamber, means for varying the quantity of air entering into the mixing chamber through said air inlet ports, means for permitting at all times a constant quantity of air to enter the air passage and pass into the mixing chamber, and means for controlling the inlet of fuel from said inspirator to the air passage in accordance with the amount of air entering the mixing chamber directly.

9. A carbureter having a mixing chamber, the floor of which is provided with a plurality of air inlet openings, a tubular extension projecting from the floor of the mixing chamber and open at both ends, a valve located within the mixing chamber and controlling the inlet of air through said air inlet ports, said valve having passages leading to its interior, a tubular valve stem opening into said passages and having sliding engagement with the walls of the air passage, a spring surrounding the walls of the air passage and engaging at its lower end with the hollow stem of the valve, an inspirator nozzle connected to a source of fuel supply and extending up into the hollow stem, and an adjustable spindle carried by the valve and extending down through the hollow stem thereof and controlling the passage of fuel through the inspirator nozzle.

10. A carbureter having a mixing chamber, an oil-containing chamber and an air chamber disposed between the oil-containing chamber and the mixing chamber and provided with a series of ports communicating with the outside air, a plurality of ports in the mixing chamber opening into the air chamber, an air duct open at both ends and extending through the center of the carbureter and opening at its upper ends into the air chamber, a tubular extension leading from the mixing chamber into said air duct and spaced from the walls thereof, a valve located in the mixing chamber and controlling the air ports therein, said valve having passages leading from its center, a tubular stem on said valve communicating at one end with said passages and open at the other, an inspirator nozzle supported in said central air passage and communicating with the air-containing chamber, and a spindle adjustably mounted on the valve and extending through the tubular stem thereof and controlling the passage of oil through the inspirator nozzle.

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

WALTER F. SCHULZ. [L. S.]

Witnesses:
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GEORGE M. WHITE.