W. F. SCHULZ.

CARBURETER.

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1,067,623. Patented July 15, 1913.

Fig. 1.

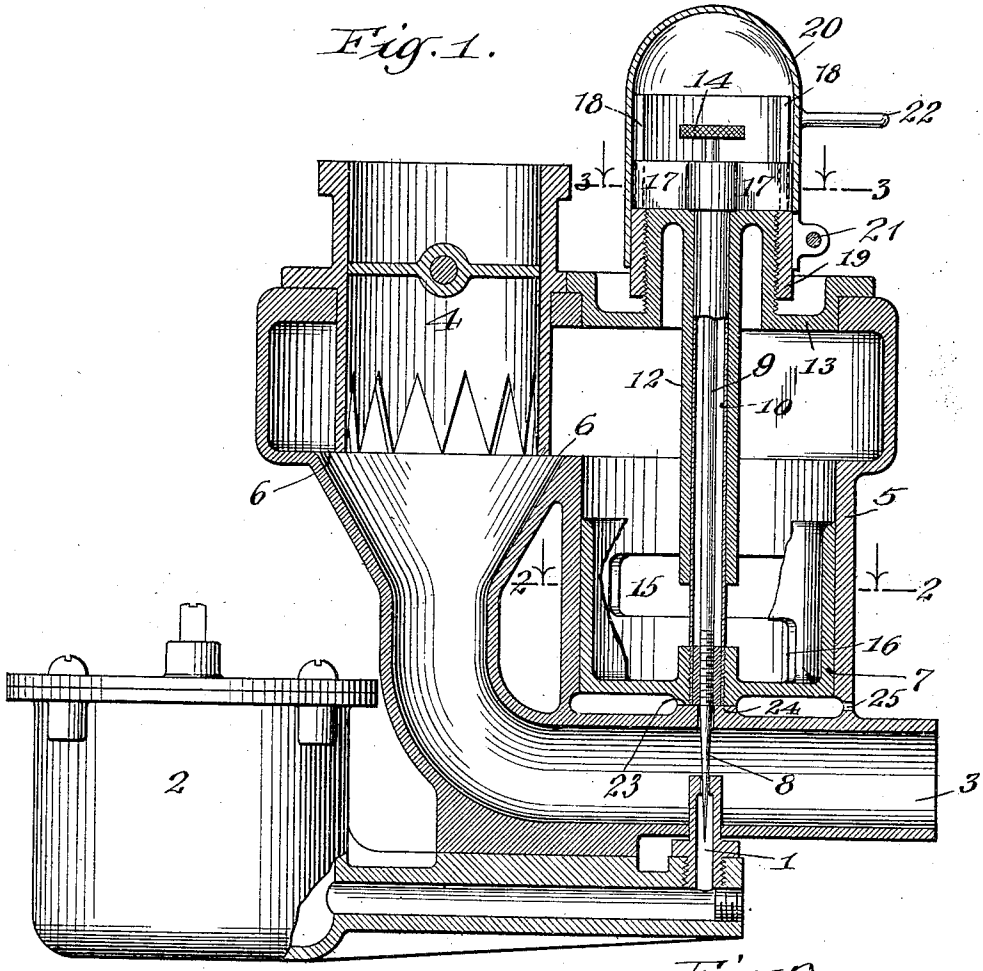


Fig. 2.

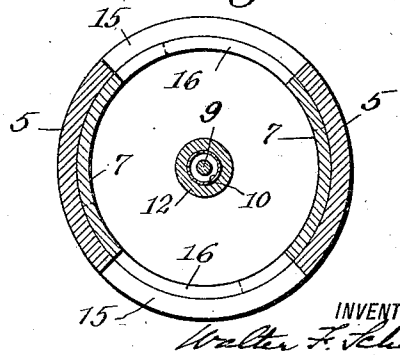
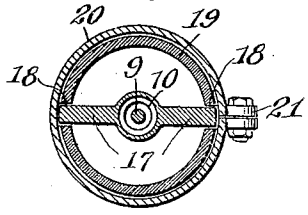


Fig. 3.



WITNESSES

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CARBURETER.

1,067,623. Specification of Letters Patent. Patented July 15, 1913.

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To all whom it may concern:

Be it known that I, WALTER F. SCHULZ, of Corona, in the county of Queens and State of New York, have invented certain new and useful Improvements in Carbureters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide an improved carbureter.

The invention relates to an admission valve controlling an inspirator nozzle and itself automatically movable by the suction in the engine cylinder to increase or diminish the charge of gasolene and secondary air supply, and its purpose is to provide for manually controlling or varying the secondary air supply without interfering with the automatic movement of the admission valve so that the air and fuel supplies may be properly proportioned according to existing conditions.

In the accompanying drawing, Figure 1 is a vertical, longitudinal sectional view of a carbureter embodying my invention. Fig. 2 is a section on line 2—2, Fig. 1, showing the air admission ports, and Fig. 3 is a section on line 3—3, Fig. 1.

In the construction illustrated the inspirator nozzle 1, extending from a tank 2 containing gasolene or other hydro-carbon, is shown opening into an air inlet pipe 3 leading to the mixing chamber 4.

5 designates a cylinder mounted on pipe 3 and communicating with the mixing chamber as at points 6. I have shown the admission valve consisting of a piston 7 movable in the cylinder 5. This piston carries the needle 8 controlling the inspirator nozzle 1 and is designed to rise or fall within the cylinder 5 according to the suction created in the engine cylinder, at the same time opening or partially closing the inspirator nozzle 1.

I have shown the needle 8 on the lower extremity of a stem 9. This stem is inclosed by and threaded in a tube 10 tapped in the lower end of piston 7, the needle 8 extending into the pipe 3 which constitutes the lower head or end of cylinder 5. The tube 10 is illustrated as inclosed by a sleeve 12 which may be cast integral with the cap 13 of the casing of cylinder 5, the sleeve depending centrally into the cylinder. By means of a milled wheel 14 at its upper end, the stem 9 may be turned to effect the desired adjustment of the needle for starting.

The cylinder 5 is shown formed with oppositely disposed air inlet ports 15. Similar ports 16 are formed in the piston 7, the pairs of contiguous ports being normally parallel and the piston ports below or out of alinement with the cylinder ports when the piston is fully lowered and the engine at low speed.

From what has thus far been said it will be apparent that the needle may readily be so adjusted that when the piston is lowered the inspirator will be set for low speed and that when the engine speeds up and the piston 7 rises and withdraws the needle to admit more gasolene, the ports 15 and 16 will gradually come into alinement and admit atmospheric air to the mixing chamber. It may happen, however, that the conditions will require additional gasolene but less air than would be admitted if the two series of ports came fully into alinement. To avoid this and yet enable the piston to continue rising and withdrawing the needle, I provide for varying the passage through the ports 15 and 16 as, for instance, by turning the piston axially. As appropriate means for accomplishing this purpose I have made the tube 10 of T-shaped formation, the laterals 17 resting on the cap 13 of the casing and extending into opposite grooves 18 of a ring 19 threaded on cap 13. A dome shaped member 20 fits over and is clamped to ring 19 as at 21 and is provided with a handle 22. Thus by turning the dome 20 ring 19 will turn on cap 12 and, through the laterals 17 of tube 10 and the rigid connection of the latter to the piston 7, the piston will be turned axially, moving its ports 16 partially out of alinement with the cylinder ports 15, thus lessening the area of the opening through which atmospheric air is being admitted.

I have shown the lower wall of the piston formed with a central boss 23 which, when the piston is lowered, rests upon a similar boss 24 on the top of pipe 3 constituting the lower head of cylinder 5. The space thus provided at all times between the lower ends of the piston and cylinder has a narrow outlet 25 through the cylinder to the

atmosphere. By this means the air which would be compressed as the piston lowered is allowed to escape.

It will be noted that the construction described permits me to adjust the needle 8 for low engine speeds, and that the air control in no way affects the office of the admission valve, as the latter may rise or fall and control the fuel supply regardless of the variations in air supply.

I claim as my invention:—

1. In a carbureter, the combination with the mixing chamber and the inspirator nozzle, primary air admitting means and means for conducting said primary air and the fuel from said nozzle to said mixing chamber, of an admission valve automatically controlling said nozzle, said valve comprising a piston and cylinder in which said piston is movable by the suction in the mixing chamber, said piston and said cylinder having each a port for admitting a secondary air supply and adapted to register when said piston is automatically moved to open said nozzle, and independent means for turning said piston axially to vary the secondary air supply through said ports without interfering with the automatic reciprocation thereof.

2. In a carbureter, the combination with the casing constituting a cylinder having air ports, the piston movable in said cylinder also having air ports, and the inspirator nozzle controlled by said piston, of a rotary ring supported on said casing, a tube movable with said ring and secured to said piston, and means for rotating said ring, for the purpose stated.

3. In a carbureter, the combination with the casing constituting a cylinder having air ports, the piston movable in said cylinder also having air ports, and the inspirator nozzle controlled by said piston, of a cap on said casing having a sleeve depending therefrom, a ring on said cap formed with opposite grooves, a tube extending through said sleeve and having lateral portions seated in said grooves and secured to said piston, and means for rotating said ring, for the purpose stated.

4. In a carbureter, the combination with the casing constituting a cylinder having air ports, the piston movable in said cylinder also having air ports, and the inspirator nozzle controlled by said piston, of a cap on said casing having a sleeve depending therefrom, a ring on said cap, a tube extending through said sleeve movable with said ring and secured to said piston, a stem threaded in said tube and having a needle extending into said nozzle, means for adjusting said needle, a dome secured to said ring, and a handle on said dome.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WALTER F. SCHULZ.

Witnesses:
CARL F. SCHULZ,
H. S. DOWNING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."