W. J. P. MOORE.

CARBURETER.

APPLICATION FILED MAR. 31, 1914.

1,148,247.

Patented July 27, 1915.

2 SHEETS—SHEET 1.

Fig. 2

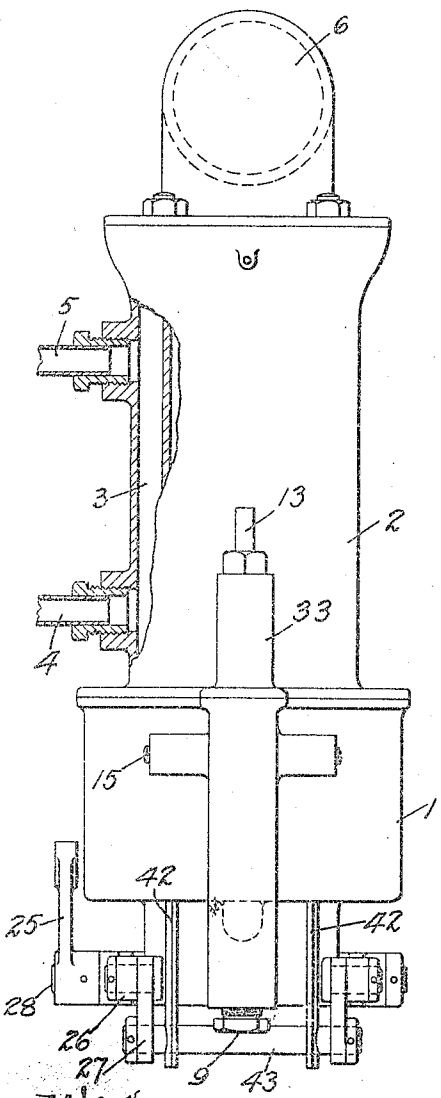
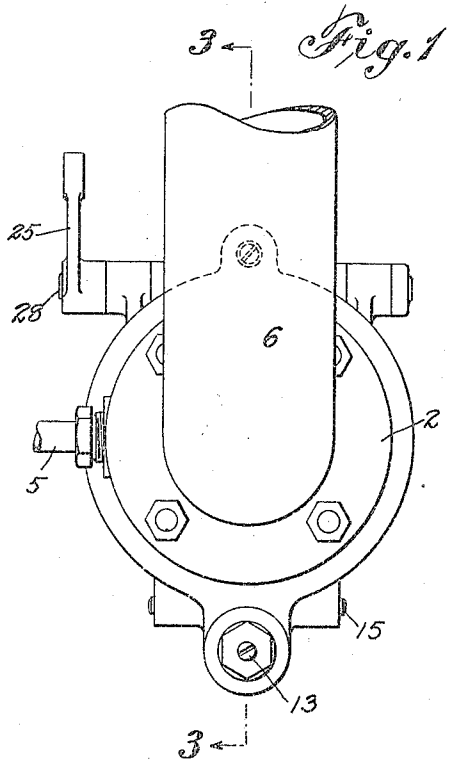


Fig. 1



Witnesses

Frank H. Wick Jr.

Estelle M. Bryman

Inventor

William J. P. Moore

per Fred D. Baker, Atty

W. J. P. MOORE.

CARBURETER.

APPLICATION FILED MAR. 31, 1914.

1,148,247.

Patented July 27, 1915.

2 SHEETS—SHEET 2.

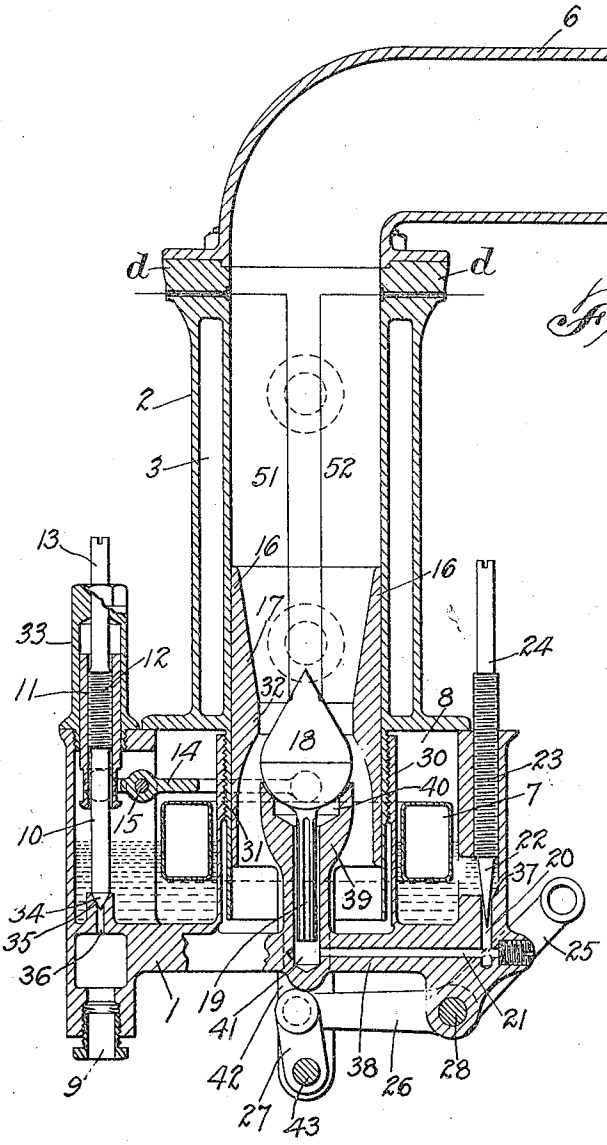


Fig. 3

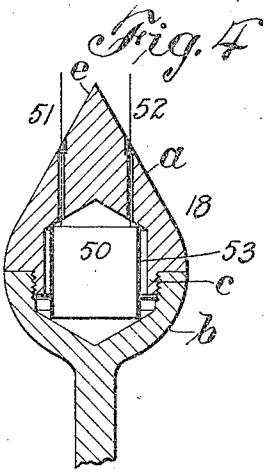


Fig. 4

Witnesses

Frank A. Vick Jr.

Estelle M. Bryman.

Inventor

William J. P. Moore,

per Fred A. Vasken,

Atty.

UNITED STATES PATENT OFFICE.

WILLIAM J. P. MOORE, OF NEW YORK, N. Y.

CARBURETER.

1,148,247. Specification of Letters Patent. Patented July 27, 1915.

Application filed March 31, 1914. Serial No. 828,534.

To all whom it may concern:

Be it known that I, WILLIAM J. P. MOORE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention refers to certain new and useful improvements in carbureters and has for its object the production of a more simple and effective device than has heretofore been used.

It consists essentially in the employment with a Venturi tube, of a central floating ball or other shaped valve, which may be electrically heated to any desired temperature, together with the other necessary structural features of a carbureting instrument, whereby the proper degree for the mixture of air and gas, hydrocarbon oil or hydrocarbon vapor, is automatically varied and regulated in a more perfect and successful manner than is possible with the other forms of carbureting mechanism now in use; and the invention further comprises numerous details and peculiarities in the construction, arrangement and combination of parts, substantially as will be hereinafter described and then more particularly pointed out in the claims.

In the accompanying drawing illustrating my invention: Figure 1 is a top plan view of my improved carbureter. Fig. 2 is a side elevation of the same with certain parts in section. Fig. 3 is a vertical sectional view on the line 3, 3 of Fig. 1. Fig. 4 is a vertical section of the central floating valve.

Similar characters of reference designate corresponding parts throughout the different figures of the drawing.

1 denotes a casing adapted to contain numerous mechanical parts, and preferably connected with a pipe 2, having a water jacket 3, to which pipe 2 is bolted another pipe 6 leading to the engine manifold. The casing 1 has a general cylindrical form and therein is an annular fuel chamber 8. This annular chamber 8 has an inner cylindrical wall 30 screw-threaded to engage a correspondingly screw-threaded part 31 of the above mentioned pipe 2, which pipe is thereby connected securely to the casing 1, it being noted that the threaded part 31 is in line with the cylindrical bore of the pipe 2 and extends through the center of the casing 1. There is thus an open passage through the center of the casing 1 into the pipe 2, through which air from below casing 1 enters the device. This pipe 2 with its extension 31 contains a movable Venturi tube 16, which is contracted at 17 in diameter so that near the middle part of the tube its diameter is reduced quite a little below the diameter at the ends, there being thus formed at the middle point of the Venturi tube a valve seat 2 for a valve 18, the function and operation of which I shall proceed later on to more fully and carefully describe.

In the chamber 8 is an annular float 7 of cork, metal or any other suitable material, which floats in the fuel supply in said chamber. Resting on the float 7, at opposite sides thereof, are the arms of a forked lever 14, which is pivoted in the casing 1 at 15, and is likewise pivoted to a slide 11, working in a cylindrical vertical guide 33, secured upon the side of the casing 1. This slide 11 carries a valve stem 10, the lower end of which is furnished with a pointed valve 34 operating in conjunction with a seat 35 at the mouth of the passage 36, the lower end of which passage receives gasolene or other liquid fuel from a pipe 9 connected with a source of supply. The valve stem 10 has a screw-threaded portion 12 running through the slide 11 and adjustable relatively thereto. The upper end 13 of the stem 10 projects through the upper portion of the extension 33 of casing 1 where it can be operated upon from without for the purpose of adjusting it so as to regulate the position of its pointed end 34 relatively to its seat 35, and thus enable the level of gasolene or other liquid fuel to be greater or less as desired, it being possible in this way to vary the level in float chamber. The level of the liquid fuel in the chamber 8, having been determined upon, the adjustment of the supply valve 34 can be made so that the forked lever 14 will rest normally upon the float 7 so as to close the valve 34 when the desired level in float chamber is reached, it being noticed that when the supply is too large and the float 7 rises in consequence, the result will be to oscillate the lever 14 on its pivot 15 and thus depress the slide 11 and shut the supply valve. In this way the float determines the quantity of liquid fuel that

is to be admitted at any particular time to the interior of the chamber 8.

24 denotes a regulating needle valve having a pointed end 22 and a screw-threaded part 23, which latter screws through a side wall of the main casing 1 so as to permit an adjustment of the needle point 22 relatively to its seat 37 in the mouth of the passage 20 which leads through the wall of the casing 1, and through a connection 38 that crosses over the central opening in the casing 1, the part of the fuel passage in this cross-over connection 38 being designated 21. Passages 20 and 21 enable the fuel to reach a point in the lower end of a central cup-shaped stand 39, rising upwardly from the connection 38. The cup-shaped stand 39 has a cup-shaped recess 40 at its upper end to receive the floating valve 19, and it has also a vertical passage 41 running from the recess 40 down to the lower end of the stand 39 where it connects with the passage 21. Such passage 41 contains the stem 19 of the valve 18, which stem is arranged to fit loosely in the passage 41 and is provided with longitudinal grooves to enable the gasolene or other liquid fuel to more readily pass upwardly alongside the stem 19 and into the cup 40, from which it emerges into the space around the valve 18, where it is brought into contact with the air that is entering the device through the annular space at the center of the casing 1 and around the cup-shaped stand 39.

It will thus be noted that the valve 18 is held loosely by being supported in the cup 40, and by the loose connection of its stem 19 within the passage 41, and that said valve 18 is movable, or floating, rising and falling in position so as to close down tightly upon its seat 40 or to be lifted a greater or less amount therefrom, an operation which takes place automatically during the action of the apparatus; further, it is to be noted that the Venturi tube 16 is arranged so that it can be reciprocated vertically within the pipe 2 and the central portion of the main casing 1, as already explained, this reciprocation being effected by any suitable leverage connection running to some point where it can be manipulated by the driver of the engine. Ordinarily the Venturi tube 16 may be provided with a number of downwardly extending arms 42 that project through the central space in the casing 1 where they are connected by a horizontal shaft 43. This shaft 43 is provided with links 27 to which are attached one or more arms 26 of a lever 25 that is pivotally supported at 28 in the casing 1. This lever 25 may be operated by any suitable connections. By these means, therefore, or some equivalent means, the driver can adjust the space between the Venturi tube seat 32 and the valve 18 so as to admit a greater or less amount of air, it being understood that during the operation of the device, the fuel is passing out of the fuel chamber, past the needle valve 22 and around past the valve 18 to the point where the air is entering. Thus, within the Venturi tube we have provided a mixing chamber for the air and fuel or fuel vapor. As the Venturi tube is reciprocated so as to admit a greater or less amount of air, the effect of the suction on the float valve 18 will be to open it or close it and thus allow a greater or less amount of liquid fuel or vapor to pass into the mixing chamber. In this way it will be found that I can produce a device in which the proper amount of air for the amount of fuel is adjusted automatically with niceness and discrimination so as to secure a perfect mixture which will be supplied as required for the purposes of the device and to correspond with atmospheric and other conditions. The floating valve 18 may vary considerably in shape, being sometimes a ball, but preferably a pointed sphere, the point being upward like a reversed plumb-bob, as shown in Fig. 4. Also the valve is preferably made in two parts, which are hollow, one of them, as *a*, having a screw-threaded flange *c* which screws into the other half *b*. Thus when the two parts are screwed together, there is provided an interior chamber 53. This is occupied by an electric pile or heater, having conducting wires 51 and 52 leading thereto and running through the pipe 1 and through the wall of the latter at *d*, *d*. This heater heats the valve to any desired temperature and thus assists in vaporizing the fuel. The valve part *a* is preferably pointed at *e*, and the point projects into the Venturi tube. It is evident, however, that this construction of the floating valve may vary widely in its details.

The water jacket 3, surrounding the wall of the pipe 2 is entered by pipes 4 and 5, pipe 4 being the lower one and leading to the radiator of the engine, and pipe 5 being the top one and receiving the heated water from the engine so that by such an arrangement a double purpose is subserved. The hot water from the engine is cooled by the inrush of the cold air from without; at the same time the hot water assists in heating up the mixture to a point where ignition takes place more easily.

It will be noted that all the various parts of my improved carbureter may be varied and changed within wide limits, and I do not wish to be restricted to any special construction or combination. The heating of the floating valve is an important feature on which I desire to lay stress and I wish it understood that I do not intend to be confined to heating the same electrically, because other heating substitutes may be used within wide limits.

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

1. In a carbureter, the combination with a casing, a float within said casing, means for admitting fuel to the casing, a needle valve for allowing the fuel or fuel vapor to pass from the casing into the mixing chamber, a Venturi tube and means for operating it, a floating valve within the Venturi tube, said valve having a stem, and a stationary seat for said valve.

2. In a carbureter, the combination with a main casing and a water-jacketed pipe connected thereto, said casing being annular in form and admitting air through the center, a float valve in the casing, an inlet valve controlled by the float, a Venturi tube having a central portion of reduced diameter and located within the aforesaid pipe, a floating valve within the Venturi tube and having a stationary seat, said floating valve having a stem, and means for admitting liquid fuel from the casing to the mixing chamber within the Venturi tube.

3. In a carbureter, the combination with a main casing having a fuel chamber of annular form surrounding a central passage, a Venturi tube in said passage into which air enters from the atmosphere, a leverage mechanism for operating the Venturi tube, an automatically operatable floating ball valve within the Venturi tube, said valve being provided with a stem, a seat for said valve and means for admitting fuel to the interior of the Venturi tube past the floating valve.

4. In a carbureter, the combination with a casing having a water-jacketed pipe, means for connecting said pipe to a source of hot water supply for the purpose of enabling the pipe to be heated and the water to be cooled by the inrushing air, a Venturi tube reciprocable within said pipe and receiving air from the atmosphere in the mixing chamber, a floating valve within the Venturi tube controlling the fuel outlet, said valve being provided with a stem and being automatically operative so that there may be a mixing of the fuel and air within said Venturi tube, all substantially described.

5. In a carbureter, the combination of a casing having a main pipe, a Venturi tube movable therein, means for operating said tube, and a floating valve within the tube, said valve being composed of two sections secured together, and interior heating means for said valve.

6. In a carbureter, the combination with a fuel supply, means for controlling it, a movable Venturi tube, and a floating valve within said tube, said valve being hollow and composed of separable sections, and interior heating means within the valve.

7. In a carbureter, the combination with a fuel supply, means for controlling it, a movable Venturi tube, and a floating valve within said tube, said valve being hollow and composed of separable sections, an interior heating means consisting of an electric heater, together with means for carrying the current to said heater.

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

WILLIAM J. P. MOORE.

Witnesses:
FRANK H. VICK, Jr.,
ESTELLE M. BRYMAN.