H. R. PATTERSON.

CARBURETER.

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1,226,805. Patented May 22, 1917.

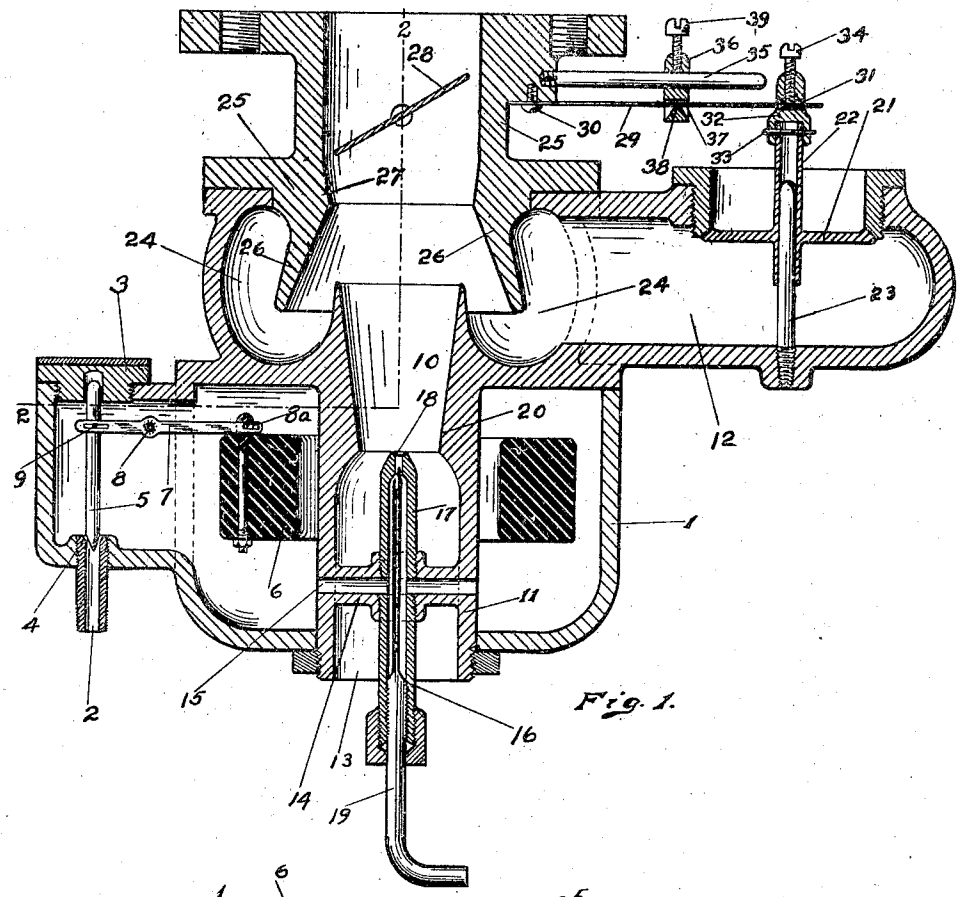


Fig. 1.

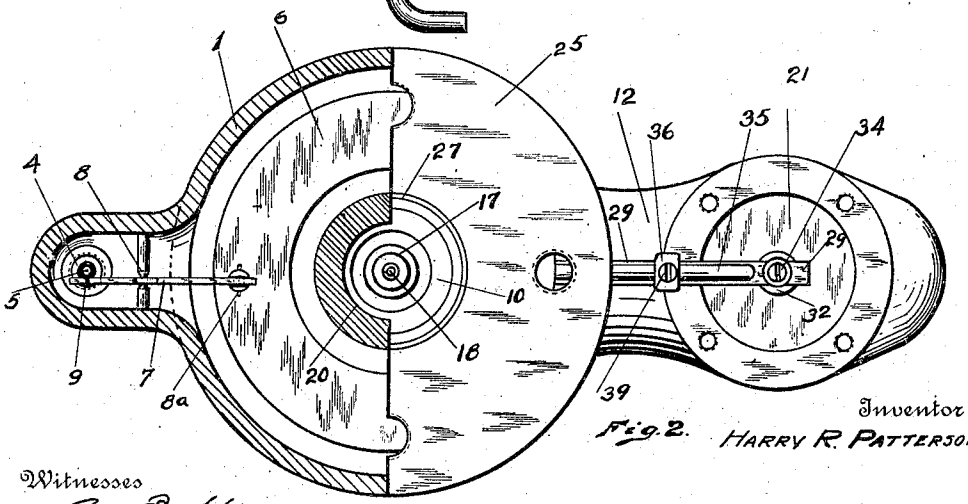


Fig. 2.

Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

HARRY R. PATTERSON, OF COLUMBUS, OHIO, ASSIGNOR OF ONE-HALF TO B. WYCLIFFE TWYMAN, OF COLUMBUS, OHIO.

CARBURETER.

1,226,805. Specification of Letters Patent. Patented May 22, 1917.

Application filed March 12, 1914. Serial No. 824,178.

To all whom it may concern:

Be it known that I, HARRY R. PATTERSON, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to carbureters and has for its object the provision of an instrument of this type whereby the gasolene vapors may be more thoroughly and more efficiently mixed with the correct amount of air to produce a highly explosive mixture.

One of the novel features of my invention resides in the provision of a plurality of venturis for reducing the pressure at a corresponding number of points to increase the volatilization of the atomized fluid. In this connection, I have also gone a step farther and provided a structure whereby these venturis are spaced from each other and also whereby an auxiliary amount of air is introduced in the mixture, the point of communication of this auxiliary air with the mixture being between these spaced venturis. It is well known that the pressure of flowing gases on the larger side of a venturi is considerably decreased from that of the smaller side and because of this reduced pressure, a vaporization of any suspended fluid itself is much more readily effected. This vaporization is also enhanced somewhat by the introduction of an auxiliary air supply and after the introduction of this auxiliary air, it is my aim to again pass the combined mixture through a second venturi.

Another object of my invention resides in providing a valve for controlling the auxiliary air supply, this valve being adjustably held in its closed position. By varying the adjustment and consequently varying the tension by which this valve is held closed, the auxiliary air may be correspondingly varied, depending upon the suction of the engine to which the carbureter, as a whole, is attached.

The preferred embodiment of my invention is shown in the accompanying drawings, in which similar characters of reference designate corresponding parts, and in which:

Figure 1 is a central vertical section of one form of my carbureter, and,

Fig. 2 is a top plan view shown partially in section, this section being taken on line 2—2 of Fig. 1.

In the drawings, there is shown the ordinary bowl or fuel reservoir 1, this fuel reservoir being provided with a fuel inlet pipe 2 and an inspection cap 3. As is usual, the inside end of the fuel pipe 2 is concaved as at 4 to form a seat for an admission valve 5, this valve being controlled in its movement by a float 6. I do not claim anything new in this portion of the structure, but have merely shown one form for the purpose of illustration, this taking the form of a lever 7 fulcrumed as at 8 upon the body of the bowl and being pivotally connected to both the float 6 and the valve stem 5 by means of pin and slot connections, such as are shown at 8^a and 9 respectively.

This bowl 1 is so formed to receive in working relation a vaporizing unit 10, this unit being formed with a hollow extension 11 at its lower end and an auxiliary air chamber 12 at its upper end. This hollow extension 11 is always in communication with the vaporizing unit itself and is also open to the atmosphere, as is shown at 13, but carries a fuel intake structure normally in communication with the fuel reservoir 1. This intake structure is shown in the integral formation 14 extending transversely across the extension 11 and being bored as is shown at 15. Passing vertically into the integral formation 14 is the mechanism for controlling the amount of gasolene normally allowed to enter the vaporizing unit from the fuel reservoir, this structure being shown by the tube 16 extending downwardly and the tube 17 extending upwardly and centrally through the extension 11 of the vaporizing unit 10. The upper end of the tube 17 is partially closed leaving only a small opening 18 which is adapted to coöperate with the needle valve shown at 19.

It will be apparent that suction from the engine will cause the flow of gasolene through the opening 18, the amount depending upon the adjustment of the needle valve 19 and also will draw in a quantity of air through the open end 13 of the extension 11. Where this incoming air and the fuel are adapted to mix, I have located the first venturi, as is shown by the enlarged tapered walls 20.

Should the load upon the engine be increased, it is customary to provide an additional air supply and this I have done by controlling the admission of air into the aux-

iliary air chamber 12 by means of the disk valve shown at 21. This valve is provided with a sleeve 22 adapted to fit over and be guided by a vertically extending stem 23. The manner of controlling the opening inclosing this valve will be hereinafter described. This air chamber 12 communicates with the gaseous mixture in the vaporizing unit, by means of the hollow concentric formation shown at 24, this concentric air chamber being open at all points to the interior of the vaporizing unit. The venturi 10 forms a portion of this unit, as does the cap structure shown at 25, which cap structure is provided with a flaring hood 26 adapted to envelop the upper open portion of the first venturi and forming the inside wall of a concentric air chamber 24. It is at this point where the auxiliary air supply mixes with a gaseous mixture and after this mixing, it is essential that it pass through a second venturi, this second venturi being shown at 27 and also as being carried by the cap structure itself. The upper portion of the cap structure is so constructed that it may be readily attached in any desired manner to the manifold of the engine, the throttle valve being shown as being carried by this cap member and designated by the reference numeral 28.

The manner of controlling the opening and closing of the auxiliary air valve 21, may be regulated by the spring suspension, as shown more clearly in Fig. 1. A flat leaf spring 29 is securely attached to a portion of the cap member 25 as is shown, for instance, by the screw 30, while its other end is adapted to pass through a slot 31 in a clevis 32, which clevis is pivotally attached to the upper end of the sleeve 22 as at 33. The tension of this spring 29 may also be regulated somewhat by the provision of the adjusting screw 34 passing through the upper end of the clevis and bearing upon the free end of the spring to cause it to be slightly bent. This tension is further regulated by varying the length through which the spring is permitted to deflect, this being accomplished by providing an outwardly extending arm 35 upon which slides an adjusting member 36 having a slot 37 therein, the knife edge 38 forming the bottom wall of this slot. Therefore, by sliding the adjusting member 36 to any desired position upon the arm 35 and securing this member in such position by tightening of the screw 39, the distance through which the spring 29 is permitted to deflect is between the knife edge 38 and the center of the sleeve 22. It will, therefore, be apparent that varying the length of this deflection, as well as placing the spring itself under an initial tension, by movement of the screw 34, will serve to control the opening and closing of the valve 21.

From the above description, it will be apparent that I have provided a carbureter in which a primary and auxiliary air supply may be had when running under certain conditions and that a more thorough mixing may be had by passing the mixture through a venturi at such point where the air is caused to mix with the gaseous fluid, thus insuring a more perfect combustion of the engine. Also, the amount of auxiliary air and the time at which this auxiliary air is permitted to mix, may be conveniently regulated by means of the mechanism controlling the valve 21.

What I claim, is:

A carbureter comprising a fuel bowl, a vaporizing unit having a primary air inlet, a spray nozzle structure in said unit and in communication with said bowl, a venturi in said unit encircling said structure, an auxiliary air intake valve, an air chamber leading from said valve and formed in said unit concentric with the upper open end of said venturi, a second venturi in said unit whose throat portion is substantially level with the top wall of said concentric air chamber, and a downwardly and outwardly flaring apron forming the lower end of said second named venturi and extending downwardly into said chamber and below the top edge of said first named venturi in spaced relation therewith.

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

HARRY R. PATTERSON.

Witnesses:
G. E. Voglesong,
Walter E. L. Bock.