J. B. KNICKERBOCKER.

CARBURETER.

APPLICATION FILED NOV. 21, 1907.

924,673. Patented June 15, 1909.

Fig. 1.

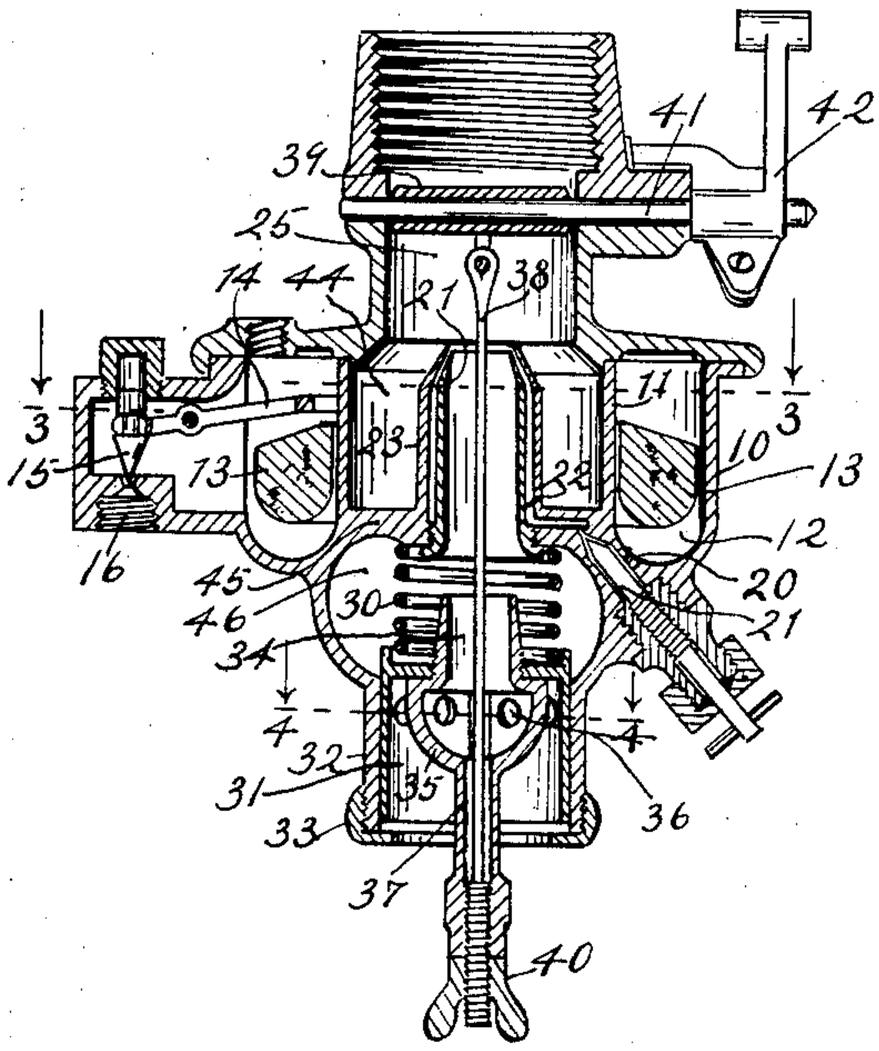


Fig. 2.

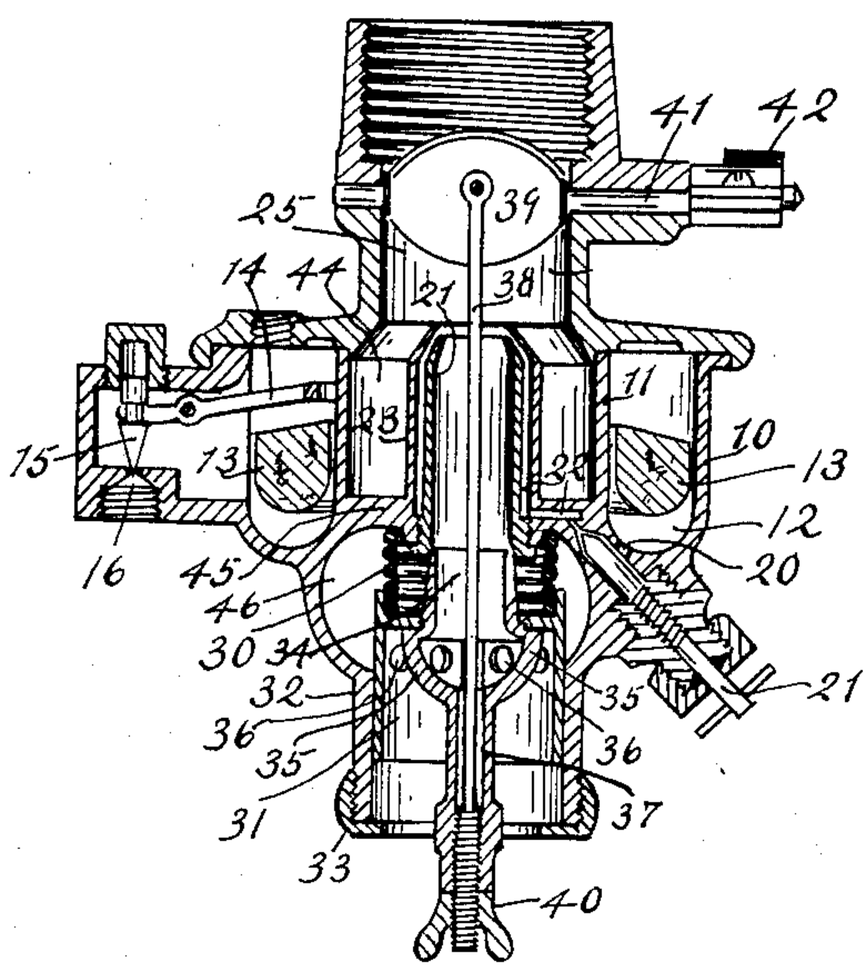


Fig. 3.

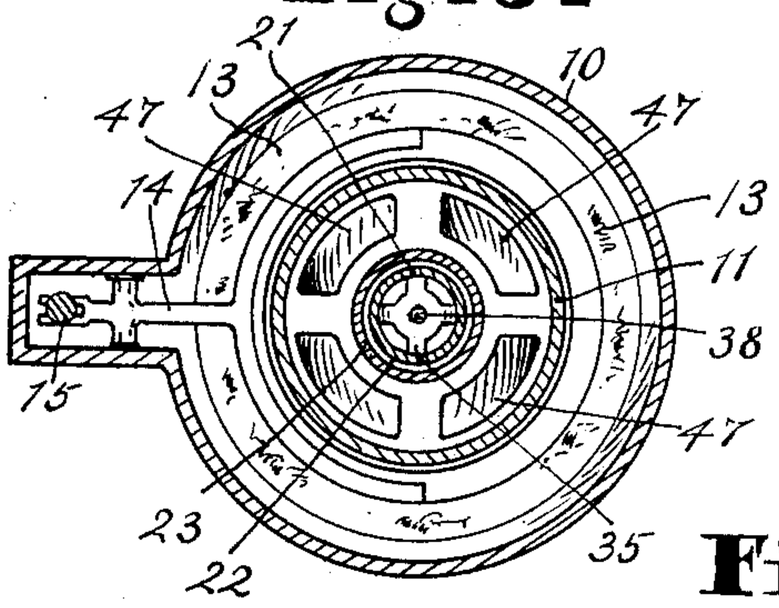


Fig. 4.

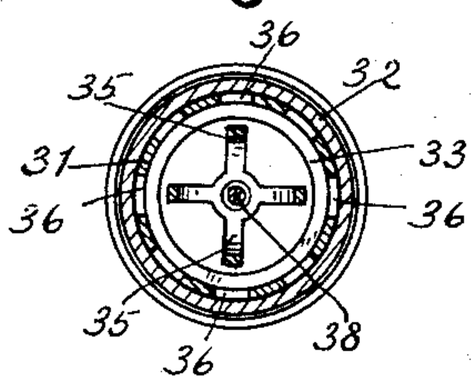
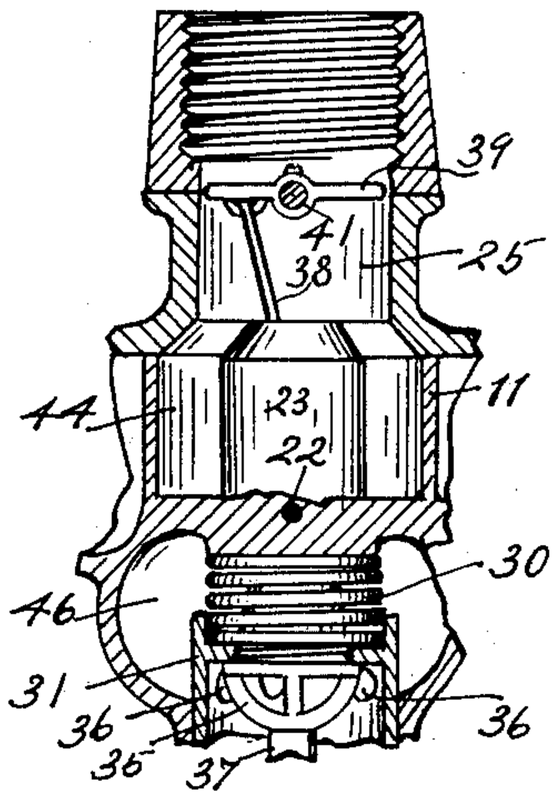


Fig. 5.



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CARBURETER.

No. 924,673. Specification of Letters Patent. Patented June 15, 1909.

Application filed November 21, 1907. Serial No. 403,186.

To all whom it may concern:

Be it known that I, JAMES B. KNICKERBOCKER, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Carbureter; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

The object of this invention is to provide an improved construction of carbureters for explosive engines so as to cause a better admixture of the fuel and air in forming the explosive gas.

To the foregoing end one feature of the invention consists in providing an annular fuel nozzle through which the fuel enters the mixing chamber, so that there will issue therefrom an annular sheet of fuel, such as gasolene, alcohol, kerosene or the like. An air passage-way is provided within and through the fuel nozzle, so that there will be a column of air passing therethrough, not only for the purpose of mixing with the fuel but also for the purpose of ejecting or drawing out the fuel through the nozzle. This is the general function of the interior column of air and to assist in ejecting the fuel, the nozzle is formed of an inner and outer tube between which the column of fuel passes, the outlet of the inner tube being somewhat below the outlet of the outer tube, whereby the interior column of air will have a greater suction effect upon the fuel.

The full nature of my invention will be understood from the accompanying drawings and the following description and claims.

In the drawings Figure 1 is a central vertical section through the device with the throttle valve closed and parts in their inoperative position. Fig. 2 is the same with the throttle valve considerably opened. Fig. 3 is a horizontal section on the line 3—3 of Fig. 1. Fig. 4 is a horizontal section on the line 4—4 Fig. 1. Fig. 5 is a central vertical section through the device on a plane at a right angle to that shown in Fig. 2, the lower part and other parts being broken away.

In detail there is an outer casing 10 and an inner casing 11 providing an annular bowl or receptacle 12 for the gasolene or fuel. This bowl is usually called the float chamber, as it carries an annular float 13 which, through the lever 14 controls the fuel valve 15 that regulates the fuel inlet port 16. From the float chamber or bowl 12 the fuel passes through the port 20 that is controlled by the needle valve 21 into the vertical annular fuel port 22. This fuel port is formed by a nozzle consisting of two tubular like walls one within the other and secured thereto at the lower end and somewhat contracted at their upper ends and so formed as to also contract the dimensions of the annular fuel port at the upper end. The outlet end of the inner tube is below the outlet end of the outer tube so the column of air passing up through the nozzle will draw the fuel through and eject it from the nozzle.

The mixing chamber 25 lies above the fuel nozzle, an air chamber 44 surrounds the fuel nozzle, and a partition 45 with perforations 47 separates chamber 44 from the air chamber 46 below. At the extreme lower end there is an extension 32 of the casing having on it a ring 33 at the bottom. In said extension 32 there is a sleeve-like compensating valve 31 with holes near its upper end that are uncovered for the admission of air into chamber 46 when the valve is elevated. Said valve is normally depressed and therefore closed by the spring 30 pressing down upon it. The top of the valve 31 has a central opening through which a conical thimble-like air inlet tube 34 projects upwardly, it being located on the upper end of a skeleton frame 35 which bears against the under side of the top of the valve 31 and has a downward projection 37 threaded at its lower end internally for receiving the rod 38 which extends through said extension 37, air inlet tube 34, and the fuel inlet tube and is pivotally connected with the throttle valve 39 at a point to one side of the pivotal center of said throttle valve, whereby when said throttle valve is tilted or opened, said rod 38 will elevate the air inlet tube 34 and the compensating air valve 31. There is a nut 40 on the lower end of the rod 38 and the throttle valve 39 is mounted on the rotary valve stem 41, to which the throttle lever 42 is secured.

When the throttle lever is not actuated very much, the central air inlet tube 34 is somewhat removed from the bottom of the fuel nozzle so that a portion of the air passing through said air inlet tube 34 will pass out centrally through the nozzle and another portion will pass laterally through the spring 30, the inner chamber 46 and through the perforations in the plate 45 into the chamber 44 surrounding the nozzle. When, however, more gas is desired, the throttle lever is

actuated further so that the throttle valve may open the compensating valve 31 into the position shown in Fig. 2, for illustration, and then a large quantity of air is admitted through the ports 36 to the outside air chamber 44 surrounding the nozzle. And all of the air that passes through the air inlet tube 34 then goes through the fuel nozzle and considerably increases the suction, whereby a greater amount of fuel is drawn through the nozzle into the mixing chamber 25.

It is obvious from the foregoing description and the drawings that the device is easily controlled. It is easy to start and very sensitive in operation and successfully withstands hardships without materially affecting the operation of the device and is therefore particularly suited for use in automobiles.

What I claim as my invention and desire to secure by Letters Patent is:

1. A carbureter including means for supplying to the mixing chamber an annular column of fuel, means for supplying the interior of said column with air, means for supplying an annular column of air surrounding the cylindrical column of fuel, a throttle valve, and means controlled by the movements of the throttle valve for regulating the supply of air.

2. A carbureter including an annular fuel nozzle with a central air passage therethrough for ejecting fuel through said nozzle, means for providing an air chamber around said nozzle, and means below the nozzle for controlling the relative volumes of air that pass through the interior of the fuel nozzle and about the exterior thereof.

3. A carbureter including an annular float chamber, an air chamber surrounded by said float chamber and having a perforated bottom, an annular fuel nozzle extending up through said air chamber, means for admitting air to the interior of said fuel nozzle, a throttle valve, and means controlled by the throttle valve for regulating the supply of air to the said air chamber.

4. A carbureter including an annular fuel nozzle with a central air passage therethrough for ejecting fuel through said nozzle, an air inlet tube below said fuel nozzle and in line with the passageway through the fuel nozzle, a compensating valve for admitting air to the outside of the fuel nozzle that is normally closed, a throttle valve, and means controlled by the throttle valve for simultaneously moving said air inlet tube toward the fuel nozzle and opening said compensating air valve.

5. A carbureter including an annular float chamber, an air chamber surrounded by said float chamber and having a perforated bottom, an annular fuel nozzle extending up through said air chamber, means for admitting air to the interior of said fuel nozzle, a throttle valve, a cylindrical lower end of the casing below said perforated bottom to the outer air chamber, a vertically movable sleeve-like compensating air valve in said cylindrical projection of the casing with ports in the sides thereof near its upper end, a spring tending to force said air valve downward, and a connection between the throttle valve and said air valve, whereby when said throttle valve is open the air valve will be elevated and the air ports therein uncovered.

6. A carbureter including an annular float chamber, an air chamber surrounded by said float chamber and having a perforated bottom, an annular fuel nozzle extending up through said air chamber, means for admitting air to the interior of said fuel nozzle, a throttle valve, a cylindrical lower end of the casing below said perforated bottom to the outer air chamber, a vertically movable sleeve-like compensating air valve in said cylindrical projection of the casing with ports in the sides thereof near its upper end, a spring tending to force said air valve downward, a connection between the throttle valve and said air valve, whereby when said throttle valve is open the air valve will be elevated and the air ports therein uncovered, and a tubular air inlet mounted on said compensating air valve so that when said air valve is actuated said air inlet tube will move toward and in alinement with the fuel nozzle.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

JAMES B. KNICKERBOCKER.

Witnesses:
N. ALLEMONG,
OLIVE BREEDEN.