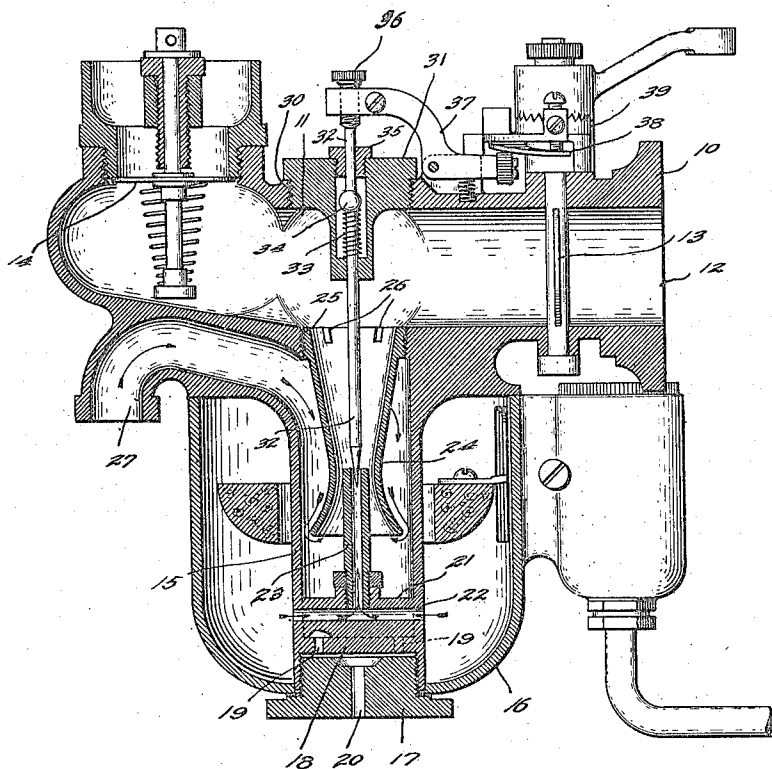


L. H. VAN BRIGGLE.
 CARBURETER.
 APPLICATION FILED JUNE 23, 1915

1,187,945.

Patented June 20, 1916.



WITNESS
Frank A. Fahle

INVENTOR
Lilburn Howard Van Briggles

BY
Hood & Schuyler
 ATTORNEYS

UNITED STATES PATENT OFFICE.

LILBURN HOWARD VAN BRIGGLE, OF INDIANAPOLIS, INDIANA.

CARBURETER.

1,187,945.

Specification of Letters Patent.

Patented June 20, 1916.

Application filed June 23, 1915. Serial No. 35,759.

To all whom it may concern:

Be it known that I, LILBURN HOWARD VAN BRIGGLE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Carbureter, of which the following is a specification.

It is the object of my invention to improve the action of carbureters for internal combustion engines.

More particularly, it is my object to promote the mixture of air and fuel.

In carrying out my invention, I provide a vertically directed fuel nozzle, and locate this within a vertical Venturi tube which is vertically adjustable, and I provide an air supply passageway which passes down along the outside of this Venturi tube, around its lower edge, and upward within the Venturi tube and around the nozzle. By this means, I provide an intimate mixing of the air and fuel. Preferably I also provide a needle which coöperates with the upper end of the nozzle so that it will not float on the stream of fuel discharged therefrom, thus further promoting the mixing of the fuel and air; and I move this needle against its spring to close the nozzle by a lever which is conveniently operated from the throttle valve so that the needle and the throttle valve are controlled in common.

The single figure of the accompanying drawing is a vertical section through a carbureter embodying my invention.

The main body 10 of the carbureter has near the top a horizontal passage 11, which at one end terminates in the discharge opening 12, in which is the usual throttle valve 13, and at the other is provided with a spring-closed auxiliary air valve 14, for opening to admit auxiliary air under high suction in the usual manner. The main body 10 also has a centrally depending tubular stem 15, which is surrounded by and supports the usual fuel bowl 16, which is held in place on the stem 15 by a screw plug 17 screwed into the bottom of such stem. Within the stem 15 and near the bottom is a cross web 18, which may be provided with one or more holes 19 which with a hole 20 in the plug 17 permit the drainage of any fuel which may collect in the stem 15. The web 18 is thickened along one diametrical line by a rib 21, which is provided with a fuel supply passage 22 communicating with the interior of the fuel bowl 16; and screwed in

the center of the upper face of the rib 21 is an upwardly projecting fuel nozzle 23, which communicates with the fuel passage 22. The upper end of the fuel nozzle 23 is surrounded by the lower end of a Venturi tube 24, which is hung from its upper end within the tubular stem 15 by a screw-thread mounting 25 in the opening between the tubular stem 15 and the transverse passage 11, so that such Venturi tube 24 may be vertically adjusted to vary its relationship to the end of the fuel nozzle 23 to meet the requirement of the particular engine, this adjustment being possible to bring the other end of the Venturi tube either above or below the floor of the passage 11. To facilitate this adjustment the upper end of the Venturi tube 25 is provided with a number of slots 26, for receiving a wide screw driver or similar tool to turn the Venturi tube in its screw thread. The upper end of the interior of the tubular stem 15, considerably above the lower end of the Venturi tube 24 just below the screw thread 25, communicates with a primary air inlet passage 27, leading in from the atmosphere, so that in operation this primary air is drawn in to the top of the plug 17 through the passage 27, passes downward through such tubular stem 15 along the outside of the Venturi tube 24, is deflected upward within the Venturi tube 24 by the web 18, and picks up the fuel from the nozzle 23 as it passes upward through such Venturi tube 24 and into the lateral passage 11 at the top of the carbureter body, whence the mixture, augmented by any auxiliary air supplied by the valve 14, passes out through the throttle 13 and outlet opening 12 to the intake manifold of the engine.

Directly above the screw thread 25 is a screw-threaded opening 30 in the top of the carbureter body 10, in which screw-threaded opening 30 is mounted a screw plug 31, which may be removed to give access to the Venturi tube 24 for adjusting the latter. The Venturi tube is also inserted in position through this screw-threaded opening 30. The plug 31 also carries a needle 32 which coöperates with the upper end of the fuel nozzle 23. This needle 32 extends upward through a central hole in the plug 31, the upper portion of such hole being enlarged to receive a compression spring 33 which acts on an enlargement 34 on the needle 32 tending to press such needle up-

ward, such upward movement being limited by a small screw-threaded plug 35 in the upper end of such hole. The needle 32 projects on upward through the plug 35, so that its upper end may be engaged by an adjusting screw 36 carried by a lever 37 which is movable in a clockwise direction by an adjustable circular cam 38 carried by the stem 39 of the throttle valve 13, and is spring-pressed in the opposite direction by a spring 40 which is relatively strong as compared with the spring 33, so as to produce opening and closing of the fuel nozzle corresponding to the opening and closing of the throttle. The spring 33 tends to force the needle 32 upward so that such needle does not float on the stream of fuel discharged from the fuel nozzle.

The throttle valve is shown in a substantially closed position, and the needle valve nearly closed: the amount of opening of the needle valve for this substantially closed position of the throttle valve being adjustable by the screw 36. On opening the throttle, the cam 38 depresses the right hand end of the lever 37 against the spring 40 so as to raise the left hand end of such lever, thereby permitting the spring 33 to force the needle 32 upward. On closing the throttle, the cam 38 allows the spring 40 to raise the right hand end of the lever 37 so as to lower the left hand end thereof and force downward the needle 32 against the action of the spring 33.

I claim as my invention:

1. A carbureter, comprising an upwardly directed fuel nozzle, a Venturi tube substantially coaxial with said fuel nozzle and vertically adjustable relatively thereto, and a tubular stem surrounding and spaced from said Venturi tube and provided with an air inlet opening above the lower end of said Venturi tube, so that the air which enters the Venturi tube must pass downward along the outside of said Venturi tube and then upward through the Venturi tube and around the nozzle, said Venturi tube being adjustable downward so that its upper end is below the upper end of said tubular stem.

2. A carbureter, comprising an upwardly directed fuel nozzle, a Venturi tube substantially coaxial with said fuel nozzle, and a stationary tubular stem surrounding and spaced from said Venturi tube and provided with an air inlet opening above the lower end of said Venturi tube, so that the air which enters the Venturi tube must pass downward along the outside of said Venturi tube and then upward through the Venturi tube and around the nozzle, and a horizontal conduit into which at an intermediate point thereof said Venturi tube discharges upwardly, said conduit and said tubular stem being relatively fixed and said conduit having a valved air inlet port on

one side of the point where said Venturi tube discharges thereinto and a valved discharge port on the other side of the point where said Venturi tube discharges thereinto.

3. A carbureter, comprising a main body having a central tubular stem discharging at its upper end into a substantially horizontal passageway at an intermediate point of the latter, said horizontal passageway and said tubular stem being relatively fixed and said horizontal passageway having a valved air inlet port on one side of such intermediate point and a valved outlet port on the other side of such intermediate point, a Venturi tube having a screw-threaded mounting in the upper end of said central tubular stem and having its lower end spaced from the walls of such stem, and an upwardly directed fuel nozzle projecting upward into the lower end of said Venturi tube, said central tubular stem being provided with an air inlet opening below said screw-threaded mounting but above the lower end of said Venturi tube.

4. A carbureter, comprising a main body having a central tubular stem discharging at its upper end into a substantially horizontal passageway at an intermediate point of the latter, said horizontal passageway and said tubular stem being relatively fixed and said horizontal passageway having a valved air inlet port on one side of such intermediate point and a valved outlet port on the other side of such intermediate point, a Venturi tube mounted in said central tubular stem and vertically adjustable relatively to said stem, and an upwardly directed fuel nozzle projecting into the lower end of said Venturi tube.

5. A carbureter, comprising a main body having a central tubular stem discharging at its upper end into a substantially horizontal passageway at an intermediate point of the latter, said horizontal passageway and said tubular stem being relatively fixed and said horizontal passageway having a valved air inlet port on one side of such intermediate point and a valved outlet port on the other side of such intermediate point, a Venturi tube mounted by its upper end in said central tubular stem and having its lower end spaced from the walls of such stem, and an upwardly directed fuel nozzle projecting upward into the lower end of said Venturi tube, said central tubular stem being provided with an air inlet opening below the point where said Venturi tube is mounted on said central tubular stem but above the lower end of said Venturi tube.

6. A carbureter, comprising a main body having a central, vertical, hollow stem and a horizontal passageway extending across the upper end of said stem and into which

said stem discharges, said horizontal passageway and said hollow stem being relatively fixed and said horizontal passageway having an air inlet opening and a mixture discharge valved outlet opening on opposite sides of the point where said central stem discharges thereinto, an upwardly directed fuel nozzle in said stem, a Venturi tube surrounding said fuel nozzle and vertically adjustable in said hollow stem, and a removable plug carried by said main body above said Venturi tube so that by its removal access may be had to the Venturi tube for adjusting it.

7. A carbureter, comprising a main body, an upwardly directed fuel nozzle in said main body, a Venturi tube surrounding said fuel nozzle, said main body having a horizontal passageway crossing the upper end of said Venturi tube and into which said Venturi tube discharges, said horizontal passageway having an air inlet valve on one side and a throttle valve on the other side of the point where said Venturi tube discharges thereinto; a needle supported by said main body above said fuel nozzle and spring-pressed upward, and means for depressing said needle against the action of said spring to close the fuel nozzle.

8. A carbureter, comprising a main body having a central hollow stem, an upwardly directed fuel nozzle in said stem, a removably mounted Venturi tube surrounding said fuel nozzle, said main body having a horizontal passageway crossing the upper end of said Venturi tube and into which said Venturi tube discharges, said horizontal passageway and said hollow stem being relatively fixed and said horizontal passageway having an air inlet valve on one side and a throttle valve on the other side of the point where said Venturi tube discharges thereinto, and a removable plug

carried by said main body above said Venturi tube so that by its removal an opening is provided for inserting and removing the Venturi tube without affecting said air inlet and throttle valves.

9. A carbureter, comprising a main body having a central hollow stem, an upwardly directed fuel nozzle in said stem, a Venturi tube surrounding said fuel nozzle, said main body having a horizontal passageway crossing the upper end of said Venturi tube and into which said Venturi tube discharges, and said horizontal passageway and said tubular stem being relatively fixed and said horizontal passageway having an air inlet valve on one side and a throttle valve on the other side of the point where said Venturi tube discharges thereinto, and a removable plug carried by said main body above said Venturi tube so that by its removal access is given both to said horizontal passage and to said Venturi tube.

10. A carbureter, comprising a main body having a T-shaped passage within it, a fuel nozzle and a Venturi tube surrounding said fuel nozzle mounted in the stem of said T-shaped passage, said Venturi tube being separable from said main body said stem having an air inlet opening below said fuel nozzle, one of the lateral portions of said T-shaped passage being provided with an air inlet opening, and a throttle in the other lateral portion of said T-shaped passage.

In testimony whereof, I have hereunto set my hand at Indianapolis, Indiana, this 19th day of June, A. D. one thousand nine hundred and fifteen.

LILBURN HOWARD VAN BRIGGLE.

Witnesses:

FRANK BIVENS,
ERNEST O. NULL.