B. N. PIERCE.

CARBURETER.

APPLICATION FILED JAN. 3, 1910.

1,005,300.

Patented Oct. 10, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

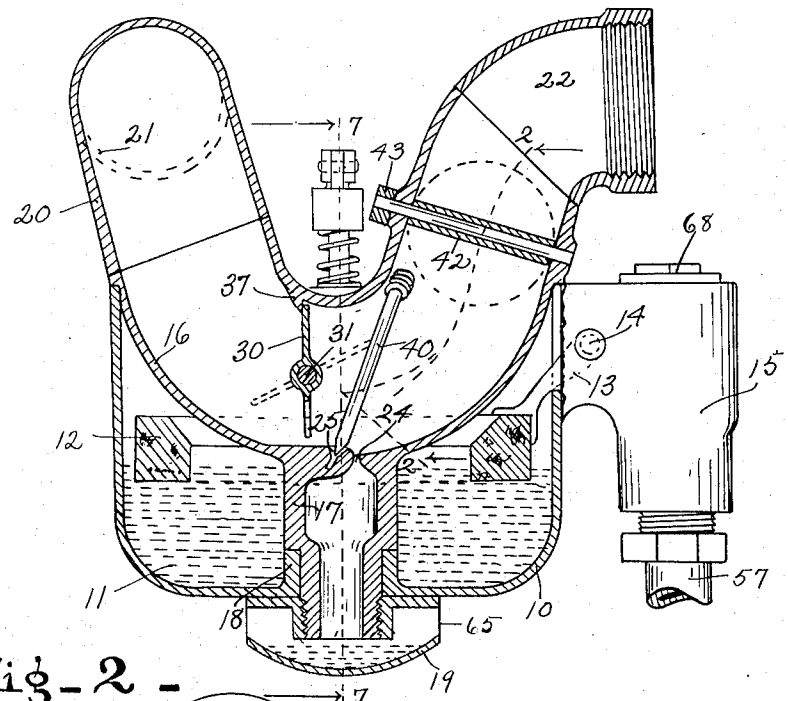


Fig. 2.

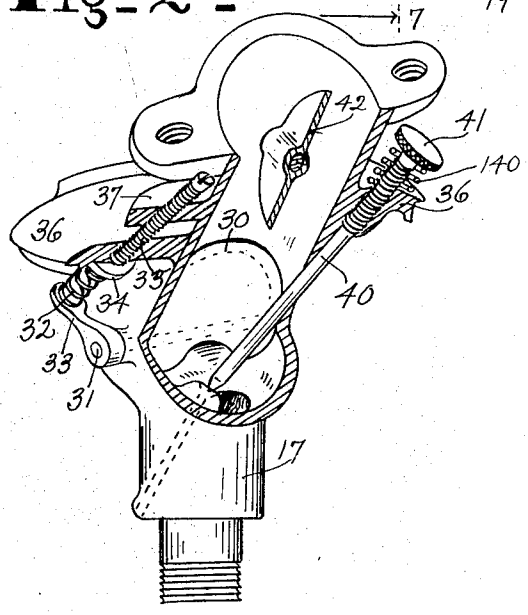
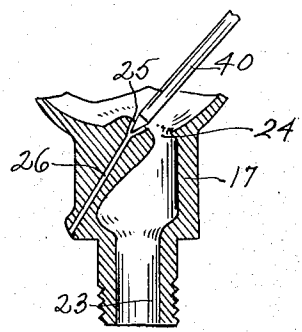


Fig. 3.



WITNESSES:

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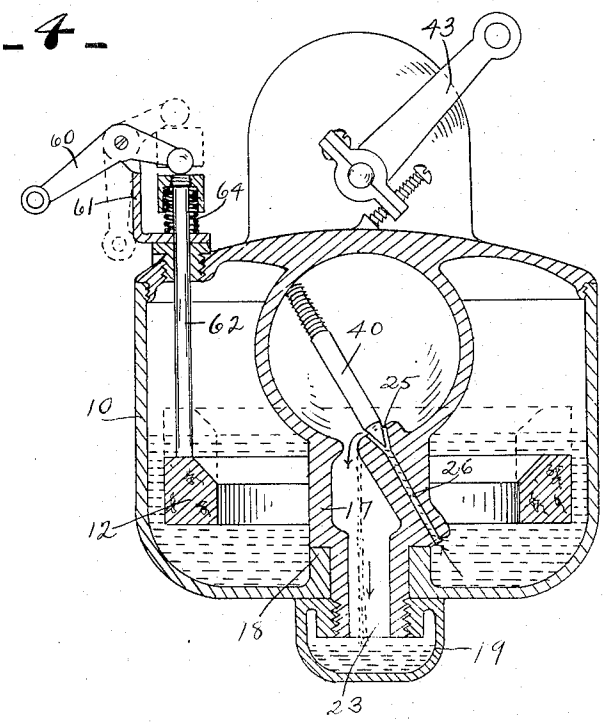
2 SHEETS—SHEET 2.

Fig. 4.



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CARBURETER.

1,005,300. Specification of Letters Patent. Patented Oct. 10, 1911.

Application filed January 3, 1910. Serial No. 536,200.

To all whom it may concern:

Be it known that I, BURT NEULON PIERCE, 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 letters refer to like parts.

The object of this invention is to improve the construction of carbureters, and the invention is particularly an improvement on the construction of carbureter shown and described in my former application for Letters Patent, Serial No. 393,627, filed Sept. 19, 1907.

One feature of the invention consists in the location of the wing valve regulating the movement of air through the carbureter from the main air inlet, particularly with reference to the fuel inlet and a secondary air inlet near the fuel inlet. The arrangement is such that said wing valve will cause the air entering from the main air inlet at a low speed to pass immediately over the fuel inlet and the secondary air inlet, so that said air current will stimulate the movement of fuel and also of air through the secondary air inlet and thus get an ample fuel supply and an ample air supply, and a satisfactory admixture of the two. To that end the secondary air inlet is immediately behind and on a lower level than the fuel inlet, so that the air passing from the main inlet under said wing valve, will tend to draw up air through the secondary inlet and never force the air out through said inlet. When the current of air from the main air inlet is relatively great, it will automatically actuate said wing valve, so that the air, or much of it, will pass above the wing valve and not sweep over the fuel inlet and secondary inlet. There is also a semi-circular seat for the upper part of the wing valve eccentrical with the body of the carbureter so as to effectually close the passageway above the wing valve excepting when it is opened by a strong incoming air current.

Another feature of the invention consists in providing a positive stop for the means that mounts the valve for controlling the fuel supply to the float chamber in connection with the float so that the relation of said fuel valve with the float will of necessity always be the same. When the fuel supply valves are replaced for any reason or substituted, the relative position of the fuel valve with the float will be always the same and fixed and there will be no chance for error, and it is very important that the float always be maintained by said valve in the same position when the valve is seated. The end of the valve is connected with a screw bolt having a head or shoulder which when screwed into the arm from the float serves as a positive stop when the shoulder or head meets the arm from the float. Also said screw bolt and fuel supply valve and the stem are constructed so as to be permanently united and yet be flexible and this is of value in handling the valve or screw bolt, as they are very small and such connection always maintains a positive relationship between the screw bolt and the valve. This is accomplished by forming the integral ball on the upper end of the valve stem that extends into the socket of the bolt, and clamping the jaws of said socket around said ball sufficiently to hold the ball in the socket and yet permit vibration on the valve stem as if it were a universal joint.

Another feature consists in novel means for starting the engine. A cup-like chamber is provided at the lower part of the bowl and an air tube therethrough in position to catch the drippings or overflow of fuel and also to be filled when the flushing mechanism is operated. This cup-like chamber is open to the outer air, said openings being above the lower extension of the inlet, so that there will always be an air chamber in said receptacle with fluid therein, but the fluid will rise slightly above the inlet before it will flow out through the openings into said receptacle. This maintains the fluid in position to be sucked or drawn up immediately for starting the automobile and whenever the demand by the engine is so great as to draw air through the passageway in the lower end of which said receptacle is secured, the air will be somewhat laden with fuel as it passes through said receptacle.

The nature of the 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 carbureter with the actuated position of the wing and throttle valves shown in dotted lines. Fig. 2 is a perspective view of the mixing chamber with

a part thereof in section on the line 2—2 of Fig. 1. Fig. 3 is a section through the lower portion of Fig. 2, which cuts longitudinally through the fuel passageway. Fig. 4 is a vertical section on the line 7—7 of Fig. 1.

In detail there is a bowl 10 containing gasolene 11, and a float 12 secured to an arm 13, fulcrumed at 14 to the fuel supply attachment 15. The bowl is cup-shaped to receive the mixing chamber 16, which is substantially a U-shaped tube with a central downward extension 17 that projects through an upwardly extending collar 18 in the central bottom part of the float chamber or bowl. The lower part of the extension 17 is externally threaded to receive the receptacle 19, whereby the bowl and mixing chamber are secured together.

The mixing chamber has a main air inlet attachment 20 with a main air inlet 21, indicated by dotted lines, and with an attachment 22 at the other end of the mixing chamber, whereby it is secured to means communicating with the cylinder of the gasolene engine.

The extension 17 extending down from the mixing chamber through the float chamber is centrally apertured to form the secondary air passageway 23, which is enlarged toward its upper end and at its extreme upper end has a narrow secondary air inlet 24 that discharges into the lower part of the mixing chamber just behind and on a lower level than the fuel inlet 25. This fuel inlet is at the upper end of the fuel passageway 26 and leads down through the enlarged portion of the extension 17 to the float chamber, as shown in Fig. 3. The part in which the fuel passageway 26 is located is built upon a higher level than the part or point where the secondary air inlet 24 is located. This is to cause the current of air coming in from the main air inlet 21 to sweep over the fuel inlet 25 and secondary inlet 24 and draw up air through said secondary air inlet and not blow out through said secondary air inlet.

To cause the current of air coming in from the main air inlet 21 at low speeds to pass entirely over the fuel inlet 25 and air inlet 24, the mixing chamber is temporarily divided by a wing valve 30 mounted on the valve stem 31 that extends horizontally through the casing of the mixing chamber and is mounted therein so as to turn under the influence of the current of air against said wing valve, when said current becomes strong. The air is enabled to operate said valve by reason of the valve being cut away on its underside so that the major portion thereof is above the valve stem 31. The lower portion of the valve is cut away so as to have almost a semi-circular recess and when there is a slow current of air coming in through the inlet 21 all of it is enabled to pass through said recess and sweep over the inlets 24 and 25 and take up fuel and additional air therethrough. But when the suction of the engine becomes very great, it will draw more air and thus increase the current through the main air inlet 21 enough to turn the upper part of the valve to the dotted line position in Fig. 1. This action of the wing valve is resisted by a spring 32 that extends from the external arm 33 on the outer end of the valve stem 31 against the collar 34 on a screw 35 that extends through the top 36 that extends laterally through the upper part of the mixing chamber casing and also through the flange 37. The tension of the spring can be adjusted by said screw 35. Said spring tends to hold the upper portion of the wing valve tightly against the flat faced rib 37 that is located on the inner upper wall of the mixing chamber near the middle thereof and extends about halfway around the mixing chamber transversely so as to be substantially semi-circular.

The fuel inlet 25 is controlled by the needle valve 40 that extends through the top 36 of the mixing chamber casing angularly through the mixing chamber to the fuel inlet. The upper part of said valve is threaded and the upper end provided with a head 41, whereby said valve may be adjusted, and a spring 140 on the valve tends to hold it from rotation. The usual throttle valve 42 is located in the exit end of the mixing chamber and has a lever 43.

57 is a fuel supply pipe and 68 is a cap at the upper end of the fuel supply attachment 15.

The flushing lever 60 is connected with suitable means for actuating it and is mounted between its ends on the vertical arm 61, see Fig. 7, and is pivoted to the upper end of a flushing rod 62 that extends down into the bowl and depresses the float 12. The springs 64 tend to return the rod 62 to its upper and normal position. The receptacle 19 at the lower end of the air passageway 17 is peculiarly formed, as shown in Figs. 1 and 7. It is somewhat elongated so as to have the openings 65 to the outside air sufficiently above the bottom to leave a chamber in which gasolene may accumulate. The openings 65, however, are above the lower end of the tube 17 slightly, so that there is an air chamber in the upper part of the receptacle 19 that is never filled with gasolene. The gasolene accumulates in said receptacle until it overflows through the opening 65, and then it will stand slightly above the lower end of the tube 17, whereby an indraft or suction of air for starting purposes, or when there is a great demand by the engine, will cause the air to sweep in through the opening 65 under the lower end of the tube

17 and become charged with gasolene sufficiently to form a combustible gas, and thence it goes directly to the engine.

The gas accumulates in the receptacle 19 from all accidental overflow or condensation and from operation of the flushing rod 62. Hence this receptacle 19 is used for starting the engine and to that end the flushing rod is actuated until the receptacle 19 is filled, and then the air drawn through said receptacle by the engine will furnish a rich charge of combustible gas.

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

1. A carbureter including a mixing chamber with a main air inlet at one end and a gas outlet at the other end, a spring-held wing valve in and extending transversely of said mixing chamber with the lower part thereof cut away to form a normal passageway thereunder for a current of air from the main air inlet, a fuel inlet entering the mixing chamber at the bottom thereof immediately behind the said wing valve, and a secondary air inlet in the bottom of said mixing chamber that is located immediately behind said fuel inlet.

2. A carbureter including a mixing chamber with a main air inlet at one end and a gas outlet at the other end, a spring-held wing valve in and extending transversely of said mixing chamber with the lower part thereof cut away to form a normal passageway thereunder for a current of air from the main air inlet, a fuel inlet entering the mixing chamber at the bottom thereof immediately behind said wing valve, and a secondary air inlet in the bottom of said mixing chamber that is located immediately behind and on a lower level than the fuel inlet, substantially as set forth.

3. A carbureter including a mixing chamber with a main air inlet at one end and a gas outlet at the other end, a spring-held wing valve in and extending transversely of said mixing chamber with the lower part thereof cut away to form a normal passageway thereunder for a current of air from the main air inlet, a fuel inlet entering the mixing chamber at the bottom thereof immediately behind said wing valve, a secondary air inlet in the bottom of said mixing chamber that is located immediately behind and on a lower level than the fuel inlet, and a flat semicircular rib at the inner upper surface of the mixing chamber casing to serve as a seat and stop for the upper portion of said wing valve.

4. A carbureter including a mixing chamber with a main air inlet at one end and a gas outlet at the other end, a spring-held wing-valve in and extending transversely of said mixing chamber with the lower part thereof cut away to form a normal passageway thereunder for a current of air from the main air inlet, a fuel inlet entering the mixing chamber at the bottom thereof immediately behind said wing valve, a secondary air inlet in the bottom of said mixing chamber that is located immediately behind said fuel inlet, and a needle valve extending through the top of the casing of the mixing chamber down slantingly through the mixing chamber to the fuel inlet.

5. A carbureter including a float chamber with a central opening surrounded by an upwardly extending collar, a mixing chamber casing closing the top of the float chamber and with a downward extension therefrom through the opening in the float chamber which extension is externally threaded at its lower end and is provided with a relatively large air passageway therethrough terminating in a relatively small secondary air inlet at its upper end into the mixing chamber, a nut adapted to screw in the lower part of said extension for securing the float chamber and mixing chamber casing together, a fuel passageway through the wall of said downward extension that leads from the float chamber to a point immediately in front of said secondary air inlet, a needle valve for closing said fuel inlet, a wing valve mounted in the mixing chamber at a point immediately in front of said fuel inlet, a seat or stop in the upper part of said valve, a spring for holding said valve in a seated position, a main air inlet at one end of said mixing chamber, and a throttle valve at the other end thereof.

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

BURT NEULON PIERCE.

Witnesses:
G. H. Boink,
O. M. McLaughlin.