J. S. GOLDBERG.

CARBURETER.

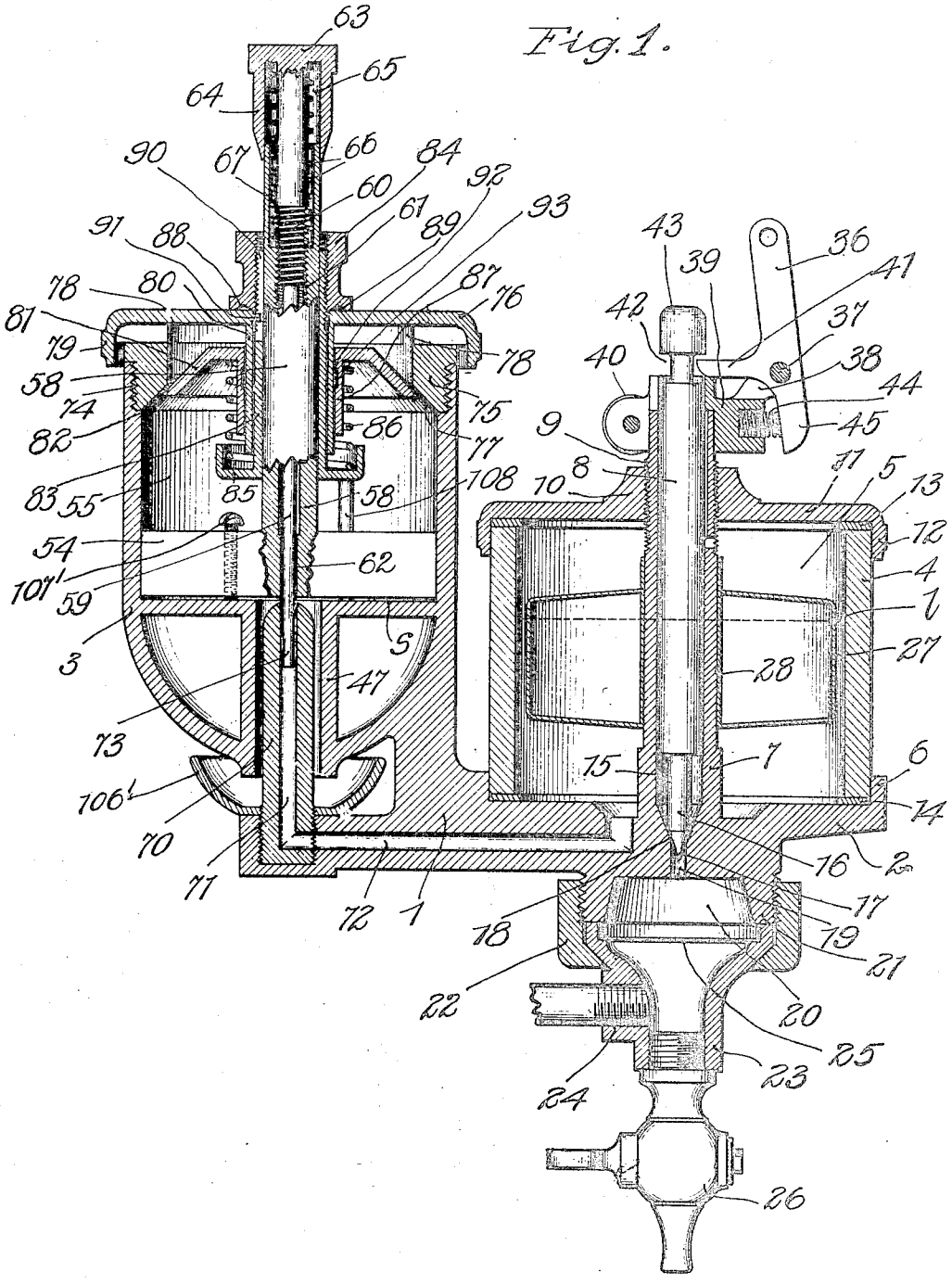
APPLICATION FILED MAR. 8, 1907.

1,106,802.

Patented Aug. 11, 1914.

2 SHEETS—SHEET 1.

Fig. 1.



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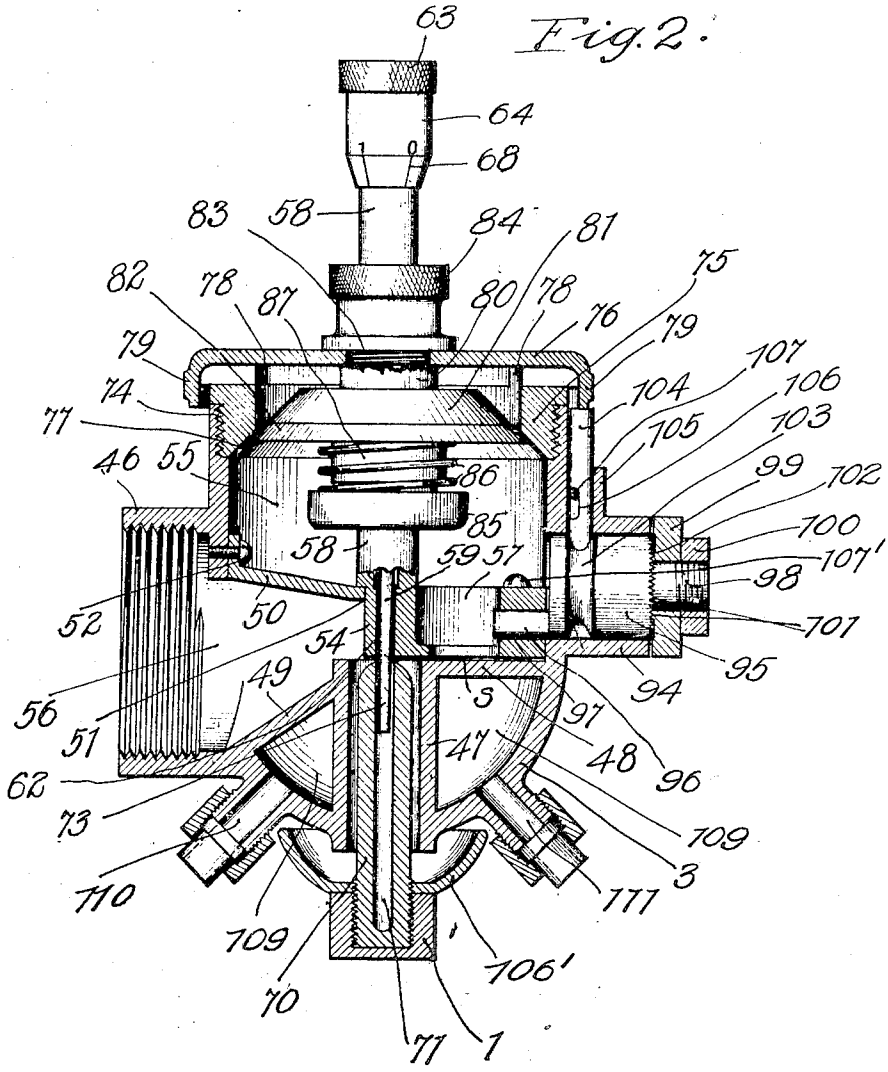
2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,106,802. Specification of Letters Patent. Patented Aug. 11, 1914.

Application filed March 8, 1907. Serial No. 361,218.

To all whom it may concern:

Be it known that I, JOHN S. GOLDBERG, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Carbureters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to carburetors, particularly to carburetors to be used for supplying gas or oil engines on automobiles or like vehicles.

My invention involves several improved features of construction and arrangement, particularly with respect to the valve mechanism for controlling the proportion and mixture of oil and air for forming the explosive gas for the engine.

One of the main requirements in carburetors is that there shall be means for establishing a certain proportion between oil and air flow and suitable valve mechanism for allowing variation in the amounts of oil or gas but maintaining at all times the determined proportion. The oil supply should be directly controlled, and not automatically by the engine suction or air flow, and by having this direct supply and fixed proportion between oil and air, the carburetor will operate entirely independently of weather conditions.

The main purpose of my invention, therefore, is to provide improved construction and arrangement for obtaining this direct and constant proportion control. These main features and other detail features will be described in the following specification and illustrated on the accompanying drawings in which drawings—

Figure 1 is an axial sectional view of my carburetor, and Fig. 2 is an axial sectional view taken at right angles to the plane of Fig. 1.

The main frame 1 has at one end the circular plate or frame 2 for supporting the float mechanism and at the other end carries the valve mechanism frame 3. Seated in the frame 2 is the cylindrical shell 4, forming the side walls of the float chamber 5, the lower end of the shell 4 being received by the rim or flange 6. Extending upwardly from the center of the shelf 2 is the hollow standard 7 in which may be reciprocated the valve rod 8. The upper end of the standard 7 has the external threaded surface 9 to be engaged by the threaded hub 10 of the cylindrical cover 11 which at its edge has the depending flange or rim 12 for recieving the upper end of the inclosing shell 4. By means of the threaded engagement between the cap and the standard, the shell 4 can be firmly clamped between the cap and the shelf 2, leather or cork washers 13 and 14 being interposed at the ends of the inclosing shell to seal the float chamber. The lower part of the standard forms a valve chamber 15 in which is the reduced extension 16 terminating in the spindle valve point 17 which is adapted for engagement with the spindle valve seat 18 and in the opening or channel 19 leading through the base of the shelf 2 into the chamber 20 formed in the lug 21. This lug is engaged by the coupling flange 22 for securing to the lug the coupling member 23 which has the opening 24 to be engaged by piping leading from the source of gasolene or other oil. A screen 25 is interposed, as shown, so that the oil before reaching the float chamber is strained and cleaned. A cock 26 also leads from the coupling to allow cleaning thereof or draining of the float chamber. The weight of the rod 8 tends to hold the spindle valve on its seat to close connection between the oil supply and the float chamber, but the action of the float 27 controls the position of the rod.

It is sometimes desired to increase the normal level of oil in the float chamber, as, for instance, for priming purposes when the engine is being started, and to facilitate the raising of the rod 8, actuating mechanism is provided in the form of a lever 36 pivoted at 37 between the wings 38 extending from the split sleeve 39, engaging about the upper end of the standard 7 and secured thereto by the thumb nut 40. A spur 41 extends from the lever into the groove 42 near the end of the rod 8 so that upon rotation of lever 36, the spur 41 will engage under the head 43 to raise the rod and unseat the spindle valve. Spring 44 seated in the split frame engages the extension 45 on lever 36 to normally hold the lever away from the valve rod. The lever 36 will ordinarily be connected with a controlling lever at some convenient part of the vehicle.

The valve mechanism frame 3 is cup-shaped, as shown. From the front of the

frame extends an internally threaded flange 46 for connecting the carburetor with the engine. Extending upwardly from the base of the frame 3 is a hollow cylindrical lug or sleeve 47; extending between the upper end of said sleeve and the wall of the frame 3 is the horizontal wall or plate 48 and the slanting wall or plate 49. The upper end of the sleeve 47 and wall 48 are in the same horizontal plane and constitute a valve seat, as shown. Extending from the front wall of the frame 3 at a point near the top of the flange 46 is a wall section or plate 50 whose front edge 51 lies in a vertical plane which lies between the axis of the sleeve 47 and the front side thereof. This wall 50 may be secured to the frame 3 by bolts or screws 52, as shown. The main valve fits between the valve edge 51 of the wall 50 and the cylindrical wall section of the frame 3, the vertical front face of the wall 54 of the valve sliding by the edge 51 as the valve is raised and lowered in a manner which will be presently described. This valve serves to open and close the rectangular passageway between the valve seat and the wall 50 to control the flow of gas from the chamber 55 above the valve seat and the wall 50 to the chamber 56 and thence to the engine. It comprises the straight front wall 54 and the semi-cylindrical wall 57. Extending upwardly from the valve is the cylindrical valve stem 58 whose center is concentric with the center of the cylindrical wall 57. The valve stem is hollow throughout its length for the reception of a valve spindle or rod 59. This valve spindle has threads 60 near its upper end adapted for engagement with the threaded part 61 within the valve stem 58, while the lower end of the valve spindle extends through the guideway 62 at the lower end of the valve stem 58, the axis of this valve stem coinciding with the axis of the sleeve 47. The upper end of the valve spindle 59 terminates in a head 63 from which extends downwardly the cylindrical flange 64 to form a pocket 65 for the spring 66 which spring also engages in the pocket 67 formed in the valve stem 58 over the threaded section 61. Upon turning of the head 63, the valve spindle 59 may be raised or lowered. The lower end of the flange 64 is tapered and has the micrometer division lines 68, while at the upper end of the stem 58 are associated micrometer divisions 69, this micrometer arrangement enabling very fine adjustment to be obtained. Supported from the main frame 1 and extending upwardly through the sleeve 47 is the nozzle 70 terminating in or a slight distance below the plane of the valve seat *s*. The outer diameter of this nozzle is somewhat less than the internal diameter of the sleeve 47, and the end of the nozzle is preferably rounded, as shown. Through the nozzle extends the passageway 71 which communicates with the passageway 72 leading through the frame 1 and communicating with the float chamber. The lower end 73 of the spindle valve 59 is gradually tapered, as shown, and extends into the passageway 71 at the end of the nozzle, this passageway being preferably cylindrical. It will thus be seen that as the valve stem 58 is moved vertically, the valve spindle 59 will be moved therewith.

At the upper end of the frame 3 are the internal threads 74 to be engaged by the threaded flange 75 extending from the cap 76, the inner edge of this flange being beveled to form a valve seat 77. This flange 75 is practically an annular ring separated entirely from the cap 76 except for small supporting webs 78 so that air may flow in under the cap flange 79 and around the flange or ring 75 and into the chamber 55. Extending downwardly from the center of the cap 76 is the sleeve 80 on which is journaled the check valve 81 having a washer 82 of leather or other material at the lower end of its beveled edge where it engages the valve seat 77. Extending through the sleeve 80 is another sleeve 83 whose upper threaded end extends upwardly beyond the cap 76 to be engaged by a thumb nut 84, while the lower end of this sleeve terminates in a cup or flange 85 for receiving the lower end of a compression spring 86 whose upper end encircles the hub 87 of the check valve. By means of the thumb screw 84 the sleeve 83 may be raised or lowered to bring any desired spring compression to hold the check valve against its seat with any desired pressure. To prevent loosening of the thumb screw 84 due to jarring, its lower surface has the indentations 88 for engagement with a post or projection 89 extending from the cap 76 so that in order to turn the thumb screw 84, it must be raised against the force of the compression spring. Also to prevent turning of the sleeve 83, it has the slot 90 in which engages the tongue 91 extending from the cap 76. To prevent chattering of the check valve, I have shown a spring ring 92 inside the hub of the check valve and resting in the annular slot 93. This spring ring forms a friction device which allows slow reciprocation of the check valve on the sleeve 80, but prevents rapid vibration or chattering of the valve. The valve stem 58 extends through the sleeve 83 and is thus guided and maintained in a central position. To move the main valve vertically, cam mechanism, is provided. Extending from the side of the frame 3 opposite the flange 46 is a bearing flange 94 through which extends a hub 95 having a crank pin 96 extending from the inner face thereof, this crank pin extending into the

elongated slot 97 cut in the cylindrical wall 57 of the main valve, so that when the hub 95 is rotated, the valve may be raised and lowered. A reduced extension 98 from the hub 95 receives the hub 99 of a lever which is secured in place by a nut 100 engaging the threaded end. To assist in holding the lever in any adjusted position, a circle of teeth 101 are formed on its inner face to coöperate with the teeth 102 at the edge of the hub 95. Also to lock the hub in the bearing 94, it is provided with an annular groove 103 for receiving the lower end of a pin 104 extending through the lug 105 formed over the bearing 94. In this pin is an elongated slot 106 through which passes the pin 107 held in the lug 105, thus preventing escape of the locking pin. The pin is of sufficient length so that it is prevented from releasing the hub 95 by the lower edge of the flange 79 when the cap 76 is secured to the frame 3. Below the lower end of the hollow sleeve 47 and supported from the main frame 1 concentric with the nozzle 71 is a cup 106′ whose purpose will later be described. For reasons which will appear later, the main valve is also held a distance off its seat *s* by a set screw 107′ passing through the wall thereof. Also for better guiding the valve and keeping it in its true position, a guide pin 108 may be provided extending upwardly from the seat *s* and through the valve.

The operation of the carburetor will now be plainly understood. The flange 46 is supposed to be connected with the engine, and the float chamber is supposed to be connected with the source of oil supply. The engine is usually started by hand by giving the engine crank one or more turns, and a gas very rich in oil is desired to produce efficient starting. The suction created when the engine is thus turned slowly by hand is not sufficient to actuate the check valve 81 and consequently there can be no air flow to the chamber 55 through the check valve. The suction when starting is not sufficient to draw enough oil from the reservoir and through the nozzle. Therefore, the operator causes rotation of the lever 36 to raise the valve rod 8 a sufficient length of time until sufficient oil flows through the passageway 72, through the nozzle and over the outer edge of the nozzle and down along the nozzle to fill the cup 106′. The edge of the cup is above the end of the passageway and when the engine is now started, the entire suction created is instrumental in drawing air through the gasolene in the cup 106′ and through the passageway between the nozzle and sleeve 47 and through the normal opening under the main valve into the engine, the air during its passage through the gasolene being saturated therewith and forming a very rich gas which produces a powerful starting torque in the engine. The nozzle is shown as supported by its threaded end engaging in the frame 1, and the priming cup also engages the threaded end and can therefore be vertically adjusted to serve two purposes; first, to control the volume of air flowing into the passageway, and, second, to control the priming by changing the level of the cup with reference to the passageway end. When the engine is once started, the lever 99 can be rotated to cause the desired valve adjustment, depending upon the operation of the engine desired. When a carburetor is first installed in connection with a certain engine, the relative adjustment between the main valve and the oil valve 59 is obtained by means of the micrometer arrangement to set the desired proportion between air and oil for obtaining the best running conditions of that engine, and when this proportion is once established, it will be maintained during operation of the adjusting lever 99. As the main valve 53 is raised upon turning of the lever, the tapered end 73 of the oil valve is raised therewith and the area of the outlet from the nozzle is increased in proportion with the increase of the outlet between chambers 55 and 56, and this proportion is maintained throughout the entire movement of the adjusting lever. Of course, after the engine has been started and the main valve raised, the suction from the engine will be sufficient to operate the air check valve 81, and air rushing by the nozzle opening together with the suction exerted on the nozzle by the engine will draw its necessary supply of oil through the nozzle from the float chamber in which a constant level of oil is maintained by the float mechanism. As has already been stated, the amount of normal opening below the main valve is controlled by the set screw 107′, and the adjustment of the air check valve is controlled by the compression spring 86 and thumb screw 84. The proportion of oil to air depends upon the relative adjustment between the main valve and the oil valve by the micrometer arrangement. The main valve on account of its construction is perfectly balanced and will not be crowded against the edge 51 by the incoming air, this air flowing straight through the valve and underneath the front wall thereof into the chamber 56.

It is very desirable to heat the oil and gas before it flows to the engine, and for this purpose the compartment 109 formed below the walls 49 and 48 is used as a hot water or hot air jacket. Outlets 110 and 111 are adapted for connection with piping leading from the heating or hot water system or connected with the exhausts of the engine so that the hot water or hot gases are driven through the compartment 109 to heat the entering oil and also the gas after mixture.

The carburetor of my construction is very readily and easily taken apart and assembled and this may be done entirely by hand without the use of tools, the caps 11 and 76 and the thumb nut 84 and micrometer head 63 having knurled surfaces by means of which they can be quickly and securely adjusted. For instance, to take apart the valve mechanism, the micrometer head 63 is first unscrewed and the spindle valve 59 withdrawn. Upon unscrewing the cap 76, this cap with the check valve parts can be removed. Upon removal of the cap 76 the locking pin 104 can be raised to allow withdrawal of the lever hub 95, and when this has been done, the main valve can be lifted out by its stem. Upon unscrewing the nut 84, the sleeve 83 can be withdrawn and the check valve removed. In a similar manner the float chamber can be taken apart, first by removing the split sleeve which allows withdrawal of the spindle valve. Upon unscrewing of the cap 11, the inclosing shell 4 is free and the float member can be removed, the parts being thus all very accessible for inspection or repairs, and the assembly of these parts is just as easily accomplished as the taking apart. By means of the micrometer arrangement very fine adjustment can be obtained for establishing the proper proportion between air and oil, and before the parts are taken apart the reading of the micrometer is noted and upon reassembly the micrometer is adjusted to give the same indication, and consequently the same proportion adjustment. All the parts also are guarded against undesired movement caused by jarring or jolting or by the vibrations of the engine.

I do not wish to be limited to the precise construction and arrangement as shown, as changes can be readily made without departing from the scope of the invention.

I claim as new and desire to secure by Letters Patent:

1. In a carburetor, the combination of a cup-shaped valve chamber, an air inlet, a valve controlling the air inlet, a fuel inlet, an outlet for air and fuel, a main valve controlling the outflow of air from the cup-shaped chamber, a stem for said main valve, a spindle passing through the stem and having a tapered end engaging in the fuel inlet for gaging the outflow of fuel, and means for raising and lowering the main valve, said air valve, main valve stem and spindle having a common axis.

2. In a carburetor, the combination of a cup-shaped valve chamber, an air inlet, a check valve automatically controlling the air inlet, a nozzle extending upwardly into the valve chamber and adapted for connection with a fuel supply, an outlet for air and fuel, a main valve over the nozzle for controlling the outflow of air from the cup-shaped chamber, a stem for the main valve extending upwardly through the center of the check valve, a spindle extending through the stem and having a tapered lower end projecting into the nozzle to control the outflow therefrom, means for raising and lowering the main valve with the spindle valve to control the outflow of air and fuel, and micrometer means for moving the spindle valve with respect to the main valve whereby to adjust the proportion of air and fuel outflow.

3. In a carburetor, the combination with a cup-shaped cylindrical casing, a horizontal valve seat formed within the casing, a fuel inlet nozzle extending upwardly into the casing and terminating at the valve seat, a check valve for controlling the inflow of air at the upper end of the casing, a main valve over the valve seat for controlling the outflow of air from the air valve, and mechanism associated with the main valve for causing vertical movement thereof to control the outflow of air, said valve being shaped to cause the air admitted by the check valve to be directed to flow transversely over the valve seat and inlet nozzle.

4. In a carburetor, the combination with a cup-shaped cylindrical casing, a partition at the lower end of the casing forming a horizontal valve seat within the casing, a second partition above the valve seat, said partitions dividing the interior of the casing into a valve chamber and a mixing chamber, a fuel nozzle extending upwardly and terminating at the valve seat, a check valve for controlling the flow of air into the casing, said valve and nozzle being concentric, a main valve associated with the valve seat for controlling the communication between the air chamber and the mixing chamber, and mechanism associated with the main valve for causing vertical movement thereof to adjust the communication between the air chamber and mixing chamber, said valve main being formed to direct the air admitted by the check valve transversely over the valve seat and the nozzle.

5. In a carburetor, the combination of a cylindrical cup shaped inclosing casing forming a chamber, an air inlet to said chamber, a fuel inlet to said chamber, valve mechanism for controlling the outflow of fuel and air from said chamber, detachable actuating mechanism associated with the valve mechanism for causing operation thereof, a cover for the inclosing casing, and locking means actuated by the cover, when the cover is applied, to lock the actuating mechanism in place.

6. In a carburetor, the combination of a cup shaped inclosing casing, valve mechanism within the casing for controlling the flow of mixture therethrough, an actuating shaft having bearings in the wall of said

frame, mechanism connected with the shaft and with the valve mechanism adapted upon rotation of the shaft to actuate the valve mechanism, a cover for the cup shaped inclosing casing, a groove in the shaft, and a locking pin for the groove, the cover when applied engaging the locking pin to retain the pin within the groove to lock the shaft in place.

7. In a carburetor, the combination of a cup shaped casing having an outlet, valve mechanism within the casing for controlling the flow of mixture therefrom, a cover for the cup shaped casing, an external flange for the cover for engaging over the mouth of the casing, an internal flange having threaded engagement with the mouth of the casing, said internal flange forming with the cover a valve chamber, the lower edge of the internal flange being beveled to form a valve seat, a check valve for the seat, means for yieldingly holding the check valve against the seat, a fuel inlet, and inlet openings leading to the valve chamber between the outer and inner flanges.

8. In a carburetor, the combination of a cylindrical cup shaped inclosing casing having a cylindrical outlet from its side for connection with an engine to be fed, a wall extending inwardly from the lower edge of the outlet and across the inclosing casing to form a valve seat, a second wall extending inwardly from the upper edge of the outlet and terminating a slight distance above the valve seat to form an outlet passageway, a main valve normally resting on the seat and against the inner edge of the upper wall to separate the air chamber above the upper wall and valve seat from the outlet chamber, a fuel nozzle extending upwardly from the bottom of the inclosing casing and terminating at the valve seat, mechanism for raising the main valve from its seat to establish connection between the air chamber above the valve seat and the outlet chamber, and a valve at the mouth of the inclosing casing for controlling the inlet of air to the air chamber.

9. In a carburetor, the combinatin of a cylindrical cup shaped inclosing casing having a cylindrical outlet from its side for connection with an engine to be fed, a wall extending inwardly from the lower edge of the outlet and across the inclosing casing to form a valve seat, a second wall extending inwardly from the upper edge of the outlet and terminating a slight distance above the valve seat to form an outlet passageway, a main valve normally resting on the seat and against the inner edge of the upper wall to separate the air chamber above the upper wall and valve seat from the outlet chamber, a fuel nozzle extending upwardly from the bottom of the inclosing casing and terminating at the valve seat, mechanism for raising the main valve from its seat to establish connection between the air chamber above the valve seat and the outlet chamber, and a valve at the mouth of the inclosing casing for controlling the inlet of air to the air chamber, the main valve being arranged to cause the air admitted by the air valve to be directed to flow transversely over the valve seat and nozzle end into the outlet chamber.

10. In a carburetor, a carbureting chamber, a primary air inlet leading into said chamber, an auxiliary air inlet leading into said chamber, a fuel inlet leading into said chamber, a mixture outlet leading from said chamber and adapted to be connected with an internal combustion engine, and manually-actuated means for simultaneously controlling said primary air inlet and said mixture outlet, there being a normal minimum opening past said manually-actuated means permitting the passage of a definite minimum amount of air and fuel to and through the mixture outlet, and a suction-operated valve controlling said auxiliary air inlet and arranged to respond to the pressure on the chamber side of said throttle.

11. In a carburetor, a carbureting chamber, a primary air inlet leading into said chamber, an auxiliary air inlet leading into said chamber, a fuel inlet leading into said chamber, a mixture outlet leading from said chamber and adapted to be connected with an internal combustion engine, and manually-actuated valve means for simultaneously controlling said primary air inlet and said mixture outlet and said fuel inlet, there being a normal minimum opening past said manually-actuated means permitting the passage of a definite minimum amount of air and fuel to and through the mixture outlet, and a suction-operated valve controlling said auxiliary air inlet and arranged to respond to the pressure on the chamber side of said throttle.

12. In a carburetor, the combination of a casing forming a mixing chamber, an air inlet and a fuel inlet to said mixing chamber, an air valve controlling the air inlet, a fuel valve in the form of a rod carried by the air valve and having a tapered end extending into the fuel inlet, a crank shaft supported from the casing, a crank pin extending from said crank shaft into a slot formed in the air valve, rotation of said crank shaft causing said air valve with the fuel valve carried thereby to be raised or lowered, and means for adjusting the fuel valve with respect to the air valve whereby to establish the proportion between air and fuel.

13. In a carburetor, the combination of a casing forming a mixing chamber, an air inlet, a fuel inlet, an air valve for controlling the air inlet, a fuel valve in the form

of a rod carried by the air valve and having a tapered end extending into the fuel inlet, a crank shaft supported from the casing, a crank pin extending from said crank shaft into a slot formed in the air valve, means for rotating the crank shaft to raise and lower the air valve with the fuel valve carried thereby, a stem extending outside the casing, and means adapted upon rotation of said stem to cause movement of the fuel valve with respect to the air valve, whereby a proportion between air and fuel may be established.

14. In a carburetor, the combination of a mixing chamber, a horizontal valve seat in the mixing chamber, an air inlet terminating in the valve seat, a fuel inlet terminating in the valve seat, a valve normally resting on the valve seat over said air inlet for controlling the air flow and extending over toward said fuel inlet, a second valve associated with the fuel inlet, manually operated mechanism adapted upon actuation to cause simultaneous movement of the valves to adjust the admission of air and fuel to the mixing chamber to hold it so adjusted, the fuel inlet being disposed in the path of the air flowing from the air inlet, and said first valve causing the air to be deflected to flow transversely across the fuel inlet.

15. In a carburetor, the combination of a valve chamber, a mixing chamber, a horizontal valve seat, an air inlet port terminating in the valve seat, a fuel inlet port terminating in the valve seat, a main valve normally resting on the valve seat for controlling the air inlet, a second valve associated with the fuel inlet, mechanism adapted upon actuation to cause simultaneous movement of the valves to admit air and fuel to the mixing chamber, the fuel inlet being disposed in the path of the air flowing from the air inlet and said valve deflecting the air to flow transversely across the fuel inlet.

16. In a carburetor, the combination of a valve chamber, a horizontal valve seat within the valve chamber, an air inlet terminating in the valve seat, a fuel inlet passageway terminating in the valve seat, a valve normally engaging the valve seat for controlling the air inlet, a valve rod carried by the valve and extending into the fuel inlet passageway, manually operated mechanism adapted upon operation to raise and lower the valve, thereby to adjust the area for air flow and to move the valve rod to adjust the fuel inlet, the fuel inlet being in the path of the incoming air which is directed by the valve to flow transversely over the fuel inlet, and means for permitting relative adjustment between the valve and the valve rod.

17. In a carburetor, the combination of a casing forming a mixing chamber, a valve seat within the chamber, an air port terminating in the valve seat, a fuel port terminating in the valve seat, valve mechanism disposed over the valve seat for controlling the flow of air and fuel into the mixing chamber, eccentric mechanism mounted on the casing and associated with the valve mechanism, means whereby rotation of the eccentric mechanism will cause movement of the valve mechanism with respect to the valve seat, and a cover for the casing, said cover being mechanically associated with the eccentric mechanism to retain said mechanism in its operative position.

18. In a carburetor, the combination of a casing forming a mixing chamber, a valve seat within the chamber, there being an inlet opening in the valve seat for communicating with air supply, there being also an inlet opening in the valve seat for communicating with a fuel supply, valve mechanism for the valve seat for controlling the flow of air and fuel to the mixing chamber, a bearing lug extending from the casing, a shaft journaled in said lug, an eccentric pin extending from said shaft and engaging in a slot formed in the valve mechanism, an actuating handle for the shaft, for causing rotation thereof to thereby cause movement of the valve with respect to the valve seat, said shaft having a groove, and an inclosing cap for the casing, said cap cooperating with said groove to retain the shaft within the bearing lug.

19. In a carburetor, the combination of a mixing chamber, an air inlet and fuel inlet to said mixing chamber, said inlets terminating in a common valve seat, a valve resting on said valve seat and being movable toward and away from said valve seat so as to adjust the flow of air and fuel, and manually operated means for securing the movement of said valve.

20. In a carburetor, a carbureting chamber, a primary air inlet leading into said chamber, an auxiliary air inlet leading into said chamber, a fuel inlet leading into said chamber, a mixture outlet leading from said chamber and adapted to be connected with an internal combustion engine, manually-actuated valve means for simultaneously controlling said primary air inlet and said mixture outlet and said fuel inlet, means for adjusting the fuel inlet controlling part of said valve means relative to the other controlling parts of said valve means, there being a normal minimum opening past said manually-actuated means permitting the passage of a definite minimum amount of air and fuel to and through the mixture outlet, and a suction-operated valve controlling said auxiliary air inlet and arranged to respond to the pressure on the chamber side of said throttle.

21. In a carburetor, a carbureting chamber, a primary air inlet leading into said

chamber, an auxiliary air inlet leading into said chamber, a fuel inlet leading into said chamber, a mixture outlet leading from said chamber and adapted to be connected with an internal combustion engine, manually-actuated valve means for simultaneously controlling said primary air inlet and said mixture outlet and said fuel inlet, means for adjusting the fuel inlet controlling part of said valve means relative to the primary air inlet controlling part of said valve means, there being a normal minimum opening past said manually-actuated means permitting the passage of a definite minimum amount of air and fuel to and through the mixture outlet, and a suction-operated valve controlling said auxiliary air inlet and arranged to respond to the pressure on the chamber side of said throttle.

22. In a carburetor, a carbureting chamber, a primary air inlet leading into said chamber, an auxiliary air inlet leading into said chamber, a fuel inlet leading into said chamber, a mixture outlet leading from said chamber and adapted to be connected with an internal combustion engine, manually-actuated valve means for simultaneously controlling said primary air inlet and said mixture outlet and said fuel inlet, means for adjusting the fuel inlet controlling part of said valve means relative to the mixture outlet controlling part of said valve means, there being a normal minimum opening past said manually-actuated means permitting the passage of a definite minimum amount of air and fuel to and through the mixture outlet, and a suction-operated valve controlling said auxiliary air inlet and arranged to respond to the pressure on the chamber side of said throttle.

In witness whereof, I hereunto subscribe my name this second day of March, A. D. 1907.

JOHN S. GOLDBERG.

Witnesses:
CHARLES J. SCHMIDT,
LEONARD W. NOVANDER.