J. V. HENLEY.

CARBURETER.

APPLICATION FILED NOV. 28, 1913.

1,148,898.

Patented Aug. 3, 1915.

4 SHEETS—SHEET 1.

Fig. 1.

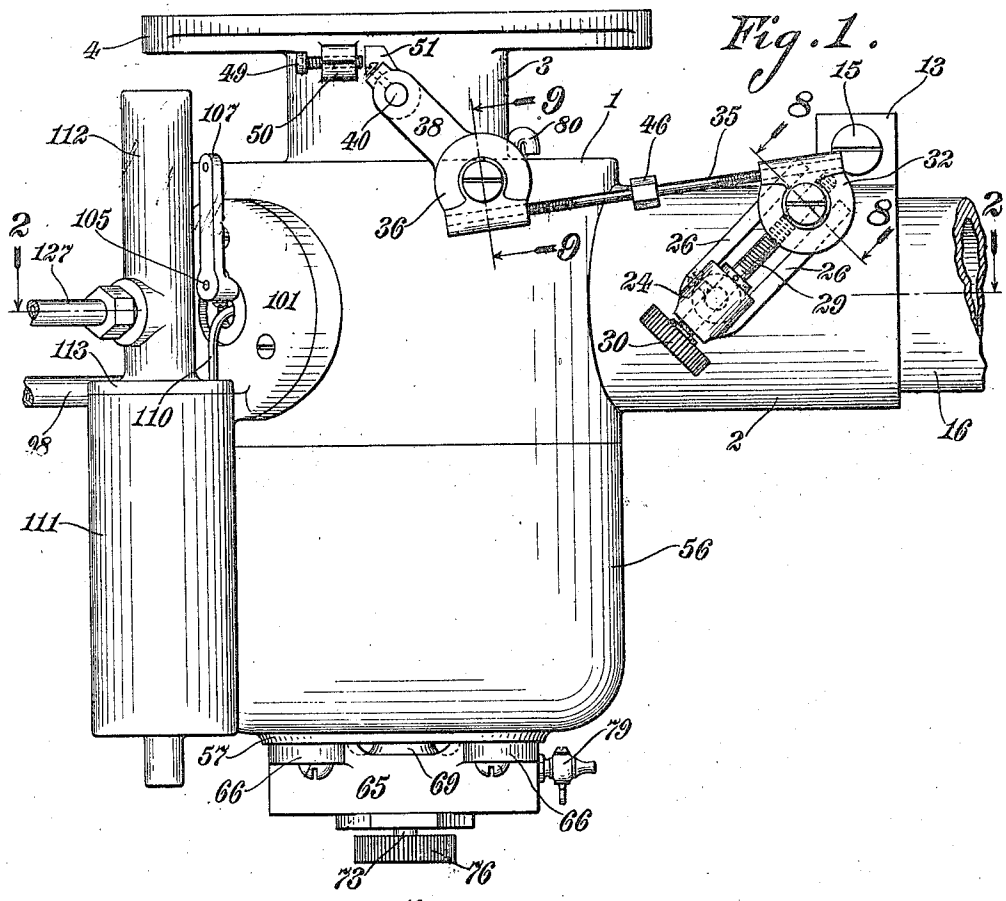
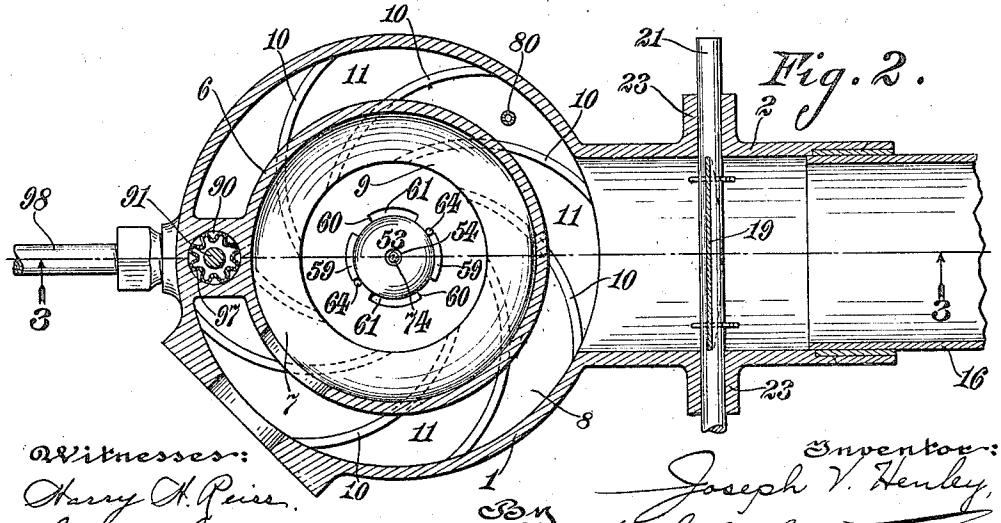


Fig. 2.



Witnesses:

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4 SHEETS—SHEET 2.

Fig. 3.

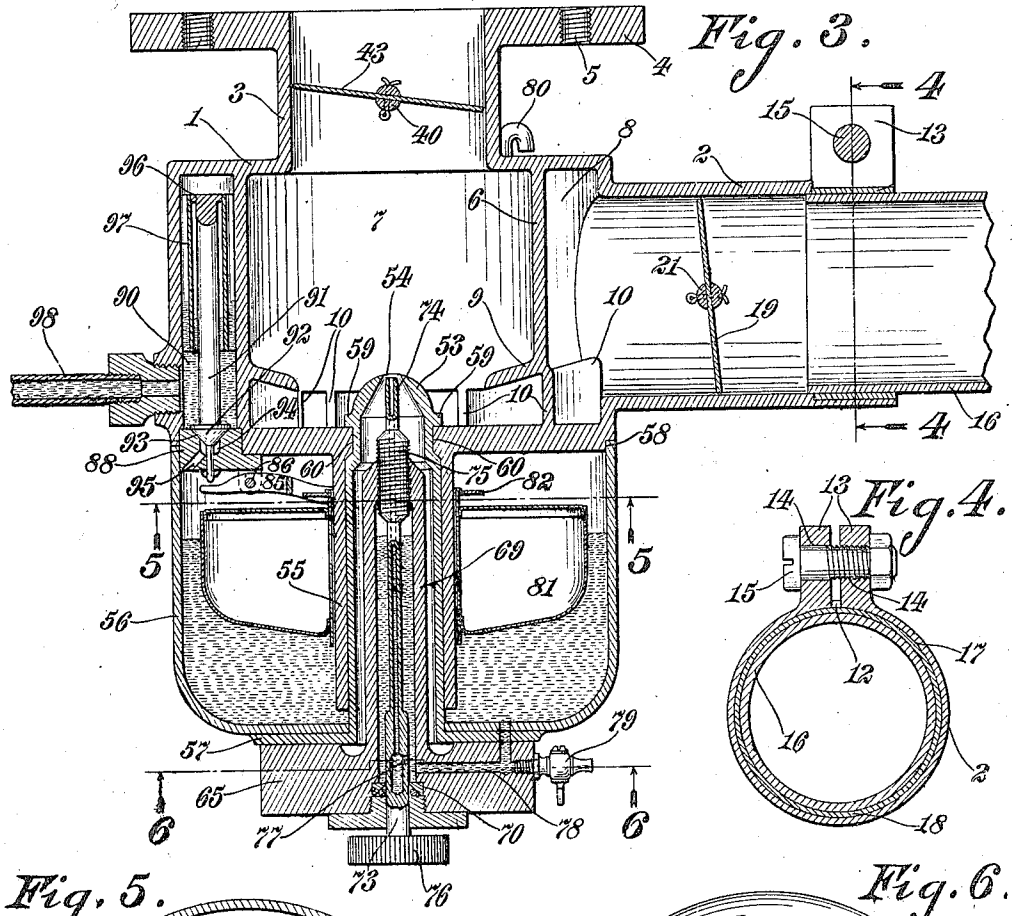


Fig. 4.

Fig. 5.

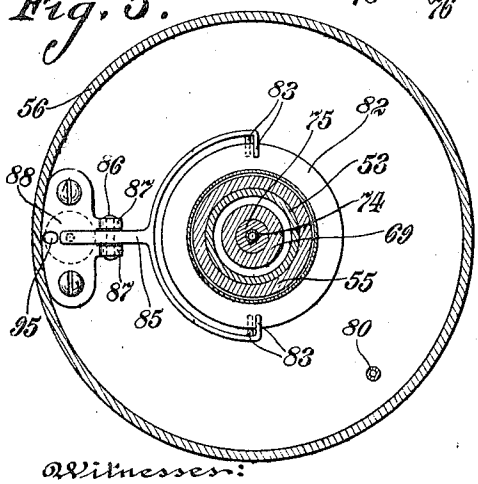
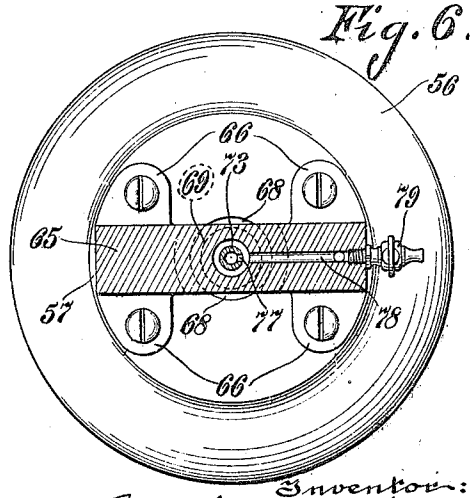


Fig. 6.



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4 SHEETS—SHEET 3.

Fig. 7.

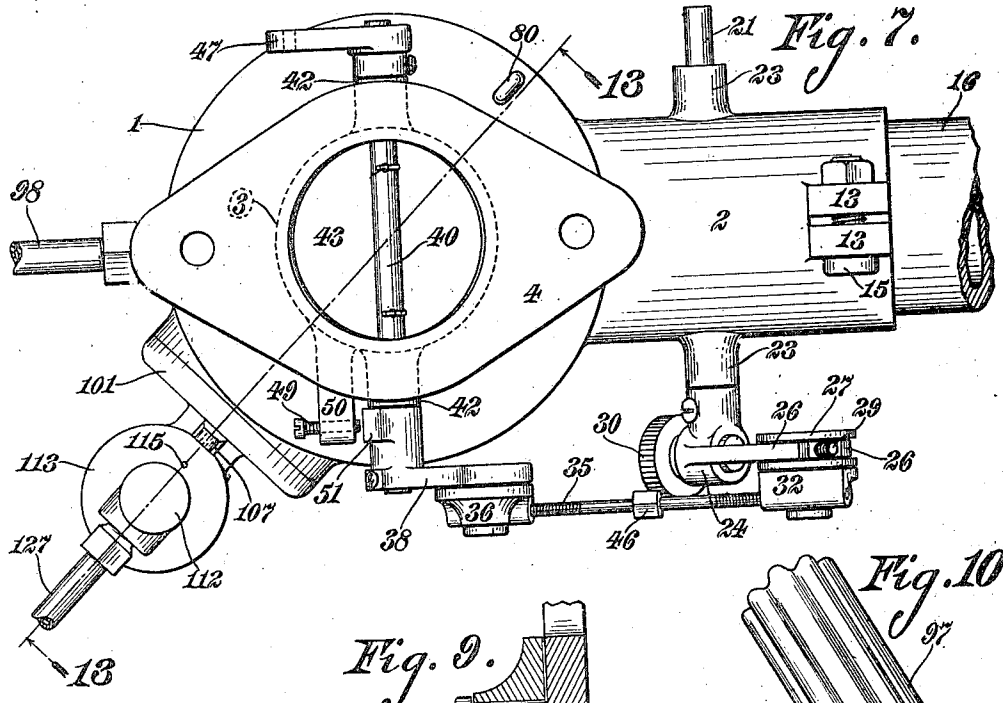


Fig. 10.

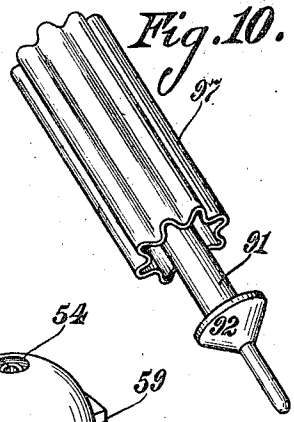


Fig. 9.

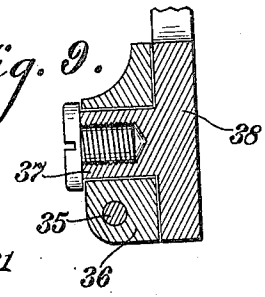
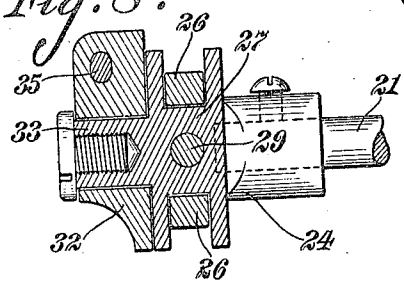


Fig. 8.



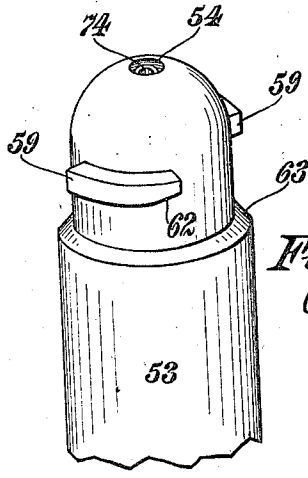
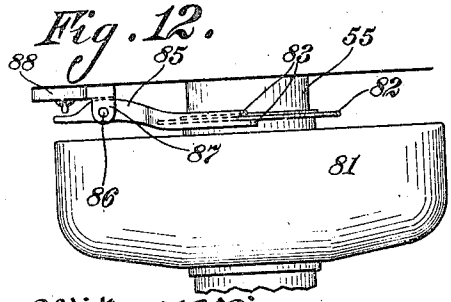


Fig. 11.

Fig. 12.



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4 SHEETS—SHEET 4.

Fig. 13.

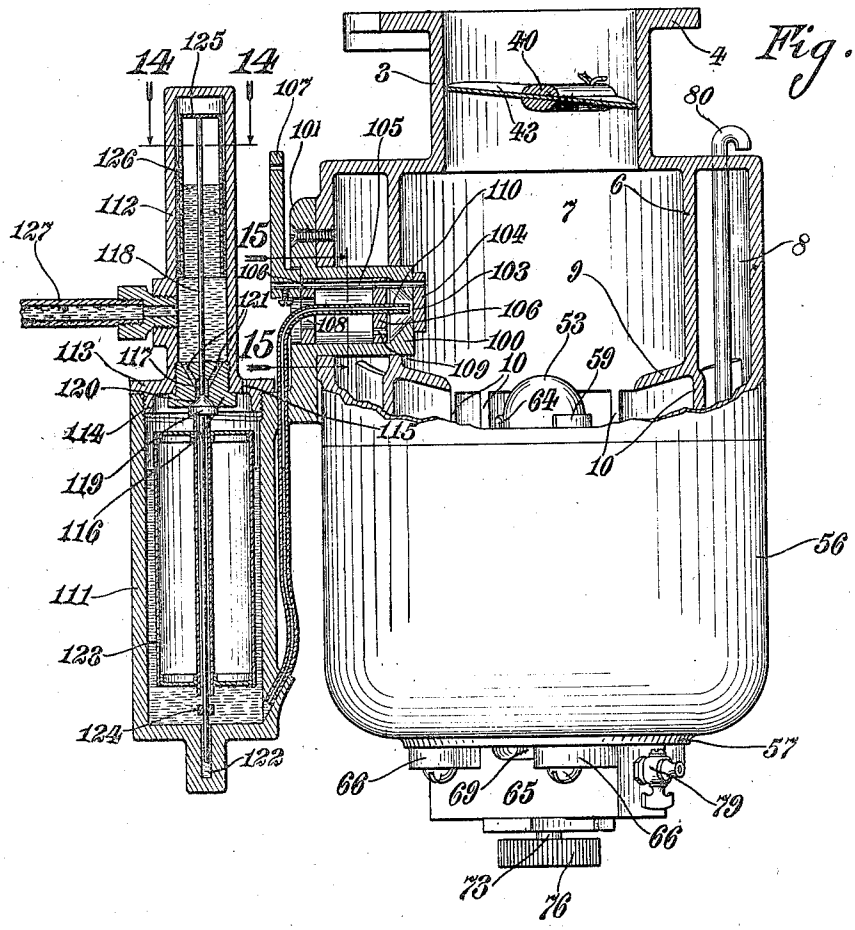


Fig. 14.

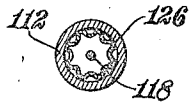
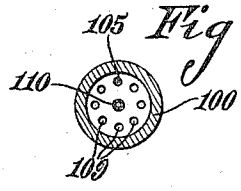


Fig. 15.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,148,898. Specification of Letters Patent. Patented Aug. 3, 1915.

Application filed November 28, 1913. Serial No. 803,479.

To all whom it may concern:

Be it known that I, JOSEPH V. HENLEY, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to improvements in carbureters which are particularly adapted for use to control the supply of fuel and air to and the mixing of same for internal combustion engines, and has for its object to provide an improved carbureter which is so designed that it will insure of the proper mixing of fuel and air and effect the proper proportioning of same for the requirements for all speeds and changes in temperature and altitude.

Another object of the preesnt invention resides in the provision of an improved carbureter which is designed so that a highly volatile and quick burning fuel can be used to start the engine and a heavier and slower burning fuel used to supply the engine after it has been started.

Further, the present invention consists of novel features of construction and arrangement of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation of a carbureter embodying the present invention; Fig. 2 is a horizontal sectional view on the line 2—2, Fig. 1, the auxiliary starter being removed; Fig. 3 is a vertical sectional view on the line 3—3, Fig. 2; Fig. 4 is a vertical sectional view on the line 4—4, Fig. 3; Fig. 5 is a horizontal sectional view on the line 5—5, Fig. 3; Fig. 6 is a horizontal sectional view on the line 6—6, Fig. 3; Fig. 7 is a top plan view of the carbureter; Fig. 8 is a sectional view, on an enlarged scale, on the line 8—8, Fig. 1; Fig. 9 is a sectional view, on an enlarged scale, on the line 9—9, Fig. 1; Fig. 10 is a perspective view, on an enlarged scale, of the fuel supply valve; Fig. 11 is a fragmentary perspective view, on an enlarged scale, of the dome of the atomizer; Fig. 12 is a detailed elevation of the float in conjunction with the means for lifting the fuel supply valve; Fig. 13 is a vertical sectional view on the line 13—13, Fig. 7; Fig. 14 is a sectional view on the line 14—14, Fig. 13; and Fig. 15 is a sectional view on the line 15—15, Fig. 13.

The casing or housing 1 is preferably formed with a cylindrical configuration, and has an intake pipe 2 extending outwardly from one side thereof and an outlet pipe 3 extending upwardly from the top of same, said outlet pipe bearing a flange 4, which is adapted to be secured to the manifold (not shown in the drawings).

A wall 6, which is preferably cylindrical in shape, extends downwardly from the top of the casing 1 and surrounds the mixing chamber 7, which opens at its top into the outlet pipe 3, being of such size in diameter as to leave a space 8 between same and the wall of the casing, into which space the inlet pipe 2 opens. The lower end of the wall 6 of the mixing chamber 7 terminates within a short distance of the bottom of the casing 1 and bears an inwardly-projecting flange 9, which is preferably arranged to slope slightly downwardly.

A plurality of spirally-arranged webs 10 connect the flange 9 of the wall 6 and the bottom of the casing 1 and extend outwardly within the lower part of the space 8 to the cylindrical wall of said casing, being arranged in spaced relation to form the walls of channels 11 for the passage of air from the space 8 into the mixing chamber 7 and thereby to cause the air to discharge somewhat tangentially and with a whirling motion into the lower part of the mixing chamber 7. The intake pipe 2 is adapted to be clamped by means of a bolt 15 and a pair of lugs 13, with which it is equipped, around an end of a pipe or tube 16 that may be connected with a suitable receptacle (not shown), which communicates with the atmosphere and has its interior heated by the exhaust pipe (not shown) or other suitable means, so that heated air will be drawn into the mixing chamber 7 for the purpose hereinafter described.

A butterfly check-valve 19, which is located in the intake pipe 2 to control the passage of air into the mixing chamber 7, and is secured to a rod 21 that extends transversely through said intake pipe and is revolubly supported in openings in a pair of oppositely-disposed lugs 23 borne thereby. An arm 24 is secured to one end of the rod 21 and has its forked free end 26 engaged with a block 27. An adjustment screw 29,

provided with a knurled head 30, is revolubly supported in an opening in the fixed end of the arm 24, extends through a screw-threaded opening in the block 27 and not only supports the latter between the prongs 26, but, also, affords a means for adjusting the position of same with respect to the rod 21, thereby to effect either an increased or a decreased movement of the valve 19. A member 32, which is revolubly supported on a lateral projection 33 borne by the block 27, is provided with a screw-threaded opening for the reception of one end of a connecting rod 35. The other end of the rod 35 fits in a screw-threaded opening in a member 36, which is revolubly supported on a lateral projection 37 borne by the free end of an arm 38, said arm being secured to one end of a rod 40, which is revolubly supported in openings in a pair of oppositely-disposed lugs 42 borne by the outlet pipe 3 of the casing 1 and extends transversely through said outlet pipe.

A butterfly throttle-valve 43 is secured to the rod 40 and is located in the outlet pipe 3 to control the passage of the mixture of fuel and air from the mixing chamber 7 into the manifold.

It will be observed that one end of the connecting rod 35 bears a right-hand screw-thread and the other end bears a left-hand screw-thread, so that when said rod is turned the free ends of the arms 24 and 38 will be moved either closer together or further apart, with the result of adjusting the relative positions of the check-valve 19 and the throttle-valve 43, an angular enlargement 46 on the middle portion of the rod 35 affording a means for turning the latter by hand.

A lever 47, which is secured to the opposite end of the rod 40, has the usual connection with the throttle lever (not shown in the drawings) so that the throttle-valve 43 and check-valve 19 can be controlled from the driver's seat.

An adjustable stop-screw 49 which fits in a screw-threaded opening in a lug 50 borne by the outlet pipe 3, stands in position to engage a lug 51 borne by the arm 38, so that when the rod 40 is rocked in the direction to move the throttle-valve 43 toward a closed position said stop-screw will limit such movement so as to prevent complete closing of said throttle-valve, thereby holding the latter open sufficiently to allow the engine to run at low speed.

An atomizer 53, which consists of a tube having a dome-shaped top with a relatively small central opening 54, fits in a hollow member 55 which extends downwardly from the middle of the bottom of the casing 1, being relatively longer than the member 55, so that its dome-shaped top extends into substantially the center of the bottom of the mixing chamber 7 to an elevation slightly higher than the flange 9 and its lower end extends below the lower end of said hollow member, the inner wall of the dome-shaped top being tapered upwardly, as best seen in Fig. 3. The lower end of the atomizer 53 extends through an opening in the bottom of a fuel receptacle or cup 56 and bears a flange 57, which is soldered or otherwise secured to the bottom of said receptacle, the latter being preferably cylindrical with substantially the same diameter as the casing 1 and being in contact at its rim with an annular groove 58 formed in the lower peripheral edge of said casing. Outwardly-projecting lugs 59 borne by the atomizer 53 overlap and rest upon inwardly-projecting lugs 60 in the upper part of the hollow member 55 and thereby support the atomizer, which, in turn, supports the receptacle 56, the arcuate spaces 61 between the lugs 60 being of sufficient size to permit the passage of the lugs 59 therethrough when the atomizer is turned by rotary movement of the receptacle to move said lugs 59 into registration with said spaces for the purpose of connecting said atomizer and receptacle with or detaching same from said casing in an obvious manner. Each lug 59 has one of its lower corners beveled as at 62, Fig. 11, so that after the atomizer 53 is inserted into the hollow member 55 in such manner as to cause the lugs 59 to pass through the spaces 61, the turning of the atomizer in the proper direction by a slight rotary movement of the receptacle 56 will cause the beveled corners 62 of the lugs 59 to ride upon the lugs 58, thus drawing the atomizer and the receptacle upwardly until the rim of the receptacle seats in the groove 58 in the casing 1 and the beveled shoulder 63 on the atomizer engages or nearly engages the beveled bottoms of the lugs 60, a plurality of stop-pins 64 being secured to the bottom of the casing 1 to limit such movement of the lugs 59.

A plate 65 extends across the lower end of the atomizer 53 and bears laterally-projecting lugs 66 adjacent to the ends thereof, which are secured to the flange 57 by suitable means, its width being preferably smaller than the internal diameter of the atomizer so as to leave uncovered spaces 68 adjacent to the sides of said plate for the passage of air into the atomizer, and there being, also, grooves in the top of said plate for the passage of air into the atomizer.

A hollow member 69 borne by the plate 65 extends upwardly into the interior of the atomizer 53 and terminates at a short distance below the dome of the latter, being relatively smaller in diameter than the atomizer so as to leave an air channel around same within said atomizer. The bore of the hollow member 69 extends through the plate

65 and has a stuffing-box 70 in the lower end thereof, through which the enlarged lower portion 73 of a relatively small tube or jet 74 extends. This tube or jet 74 extends upwardly through the interior of the hollow member 69 and bears an externally screw-threaded enlarged portion 75 near the upper end of same, which fits in an internally screw-threaded portion in the upper end of said hollow member, its upper end being in axial alinement with and slightly smaller in diameter than the opening 54 in the dome of the atomizer and its enlarged lower end 73 bearing a knurled head 76 by means of which the tube or jet is turned to adjust the position of its upper end with respect to the opening 54 in the dome of said atomizer. The enlarged lower portion 73 of the tube or jet is closed at its lower end and has an aperture 77 in its side, through which aperture fuel flows from the interior of the hollow member 69 into the interior of the tube or jet, the plate 65 containing a passage 78, which opens at one end into the interior of the hollow member 69 and extends, also, through the flange 57 and the bottom of the receptacle 56 to allow the fuel to flow from the latter into the interior of said hollow member.

A drain-cock 79, which may be attached to the plate 65, communicates with the passage 78 and affords a means for allowing the fuel to drain out of the receptacle 56, hollow member 69, and the tube or jet 74, when so desired.

From the foregoing, it will be evident that, during the suction stroke of each piston, air is drawn through the intake pipe 2, space 8, and channels 11 into the mixing chamber 7 and, also, through the spaces 68, atomizer 53, and opening 54 into said mixing chamber, the amount and velocity of the air that passes through the opening 54 into the mixing chamber being governed by the check-valve 19. The air passing through the atomizer into the mixing chamber draws the fuel out of the upper end of the tube or jet 74 and cracks or atomizes same, at the same time throwing the little particles of the fuel upwardly and laterally into the mixing chamber to become thoroughly mixed with the air in the latter before the mixture is drawn through the outlet pipe 3 and the manifold into the engine cylinder. By turning the head 76 of the tube or jet 74, the upper end of the latter can be adjusted to either a higher or a lower position within the dome of the atomizer, the arrangement being such that, when the upper end of the tube or jet is adjusted close enough to the small opening 54 in the dome of the atomizer to interrupt the flow of air through said opening, the fuel in the tube or jet is very sensitive to the slightest vacuum in the mixing chamber, thereby assuring a mixture of correct proportions for the slightest throttle opening or lowest possible speed of the engine, and when the upper end of the tube or jet is adjusted to a lower position a greater vacuum is required in the mixing chamber to lift the correct amount of fuel from the tube or jet into the latter. By this arrangement, the tube or jet can be correctly adjusted for any desired vacuum in the mixing chamber in order to obtain the proper mixture for all speeds and changes in temperature and altitude, thus permitting the use of either a dense or slow burning fuel, such as kerosene or the like, or a more volatile fuel, such as gasolene or the like, and effecting proper atomization of the fuel.

In order to adjust the carbureter for starting the engine at low speed, the throttle-valve 43 is moved to nearly a closed position by the throttle lever at the steering post, then the check-valve 19 is adjusted by turning the connecting-rod 35 in the proper direction to move the check-valve to a more closed position than the throttle-valve, so as to establish enough vacuum in the mixing chamber to lift the correct amount of fuel from the tube or jet 74 into the mixing chamber to make the correct mixture for low speed.

As a variable change in the density of the mixture is required for efficiency between low speed and high speed, or, in other words, from nearly closed position of the throttle-valve 43 to the fully opened position of same, the stroke arm of the check-valve 19 is adjusted to the proper length by means of the adjustment screw 29 to maintain the movement of the check-valve with respect to the throttle-valve so as to maintain the proper control of the vacuum in the mixing chamber for all speeds of the engine. For instance, when the throttle-valve 43 stands in the proper position for low speed, the check-valve 19 closes or nearly closes the intake pipe and thereby subjects the atomizer to substantially the full force of the vacuum, which lifts the proper amount of fuel from the tube or jet 74 into the mixing chamber to make a comparatively rich or dense mixture for low speed, but, when the throttle-valve is opened gradually, the check-valve gradually opens at the same time, thereby gradually changing the vacuum force from the throttle-valve at low speed to the check-valve at high speed, this compensation placing the mixing chamber gradually and more directly in force with the vacuum caused by the suction stroke of the engine piston and thereby reducing the mixture to the leanest form practical for use. As the fuel is entirely under vacuum control, no more fuel can be lifted into the mixing chamber than the compensation and adjustment of the throttle-valve and check-valve call for, regardless of their positions; therefore, the

adjustment being of such wide range between these two valves, the highest possible efficiency is obtained by uniform correctness of the mixture of air and fuel at all positions of the throttle-valve, insuring higher explosive force by the sensitive action of the vacuum on the atomizer in obtaining the proper amount of fuel for the mixture.

A vent-pipe 80, which preferably extends upwardly through the space 8 and openings in the top and bottom of the casing 1, communicates at its lower end with the interior of the receptacle 56 and at its upper end with the atmosphere, so as to maintain the fuel in said receptacle at atmospheric pressure, its upper end being preferably bent downwardly to prevent dust and dirt from entering same. A float 81, which surrounds the depending hollow member 55 of the casing 1 within the receptacle 56, is slidably mounted on said hollow member and is adapted to move upwardly and downwardly with the fuel in said receptacle, being provided at its upper end with an outwardly-turned flange 82. Said flange extends between the upper and lower inwardly-turned terminals 83 of the prongs of a forked lever 85, which is pivotally attached at 86 to and between a pair of lugs 87 borne by a member 88, and the latter is secured to the bottom of the casing 1 and bears an upwardly-projecting portion which fits into and forms a closure for the lower end of a valve-chamber 90, which is preferably located between the outer wall of the casing 1 and the wall 6 of the mixing chamber, the arrangement being such that any vertical movement of the float 81 will produce a corresponding movement of the forked end of said lever. The other end of the lever 85 extends beneath the lower end of the stem 91 of the valve 92 for the purpose of raising the latter off its seat 93 in the enlarged upper portion of an opening 94 in the member 88, said opening having a passage 95 leading therefrom toward the wall of the receptacle 56 to allow the fuel to flow from the valve-chamber 90 into said receptacle. Such flow takes place the float 81 descends in consequence of the fuel falling below a predetermined level in the receptacle, the movement of the float rocking the lever 85, which, in turn, forces the stem 91 upwardly, raising the valve 92 off its seat 93, the flow of the fuel continuing until the float raises with the fuel in said receptacle to such extent as to rock the lever 85 in the reverse direction sufficiently to allow the valve 92 to seat. In this way the fuel is maintained at substantially a uniform level in the receptacle 56 and the tube or jet 74.

The portion of the stem 91 that extends above the valve 92 terminates a short distance below the top of the valve-chamber 90 and bears a head 96, to which the upper end of a sleeve 97 is soldered or otherwise secured. The sleeve 97 is adapted to slide vertically with the stem 91 within the valve-chamber 90, and forms a compression chamber of suitable capacity, which chamber is closed at the top and open at the bottom, being corrugated longitudinally, as best seen in Figs. 2, 3, and 10, so as to allow the fuel to pass freely between the walls of the corrugations and the inner wall of the valve-chamber as well as into the open bottom of said sleeve. By this arrangement, the fuel which flows under usual pressure through the supply pipe 98 into the valve-chamber 90 at a point below the bottom of the sleeve 97 flows upwardly into the bottom of the sleeve and, also, between the walls of the sleeve and the valve-chamber and thereby compresses the air within the sleeve and, also, the air in the upper end of the valve-chamber, maintaining equal pressures above and below the head 96 of the stem 91 so as to allow the valve 92 to seat under the combined weight of itself, its stem, and the sleeve.

When it is desired to use kerosene as the fuel for running the engine, an auxiliary feed of gasolene is used to start the engine and to run same until the engine becomes heated sufficiently to heat the inner walls of an ordinary jacketed manifold (not shown) in the usual manner, so as to prevent condensation of the kerosene mixture during its passage from the mixing chamber to the engine cylinders, and, also, until such time as may be required to obtain heated air from the heater to which the pipe 16 is connected as hereinabove described.

This starting of the engine with gasolene is accomplished by means of an auxiliary starter which consists of an atomizer 100, which fits in an opening in the wall of the casing 1 and, also, in an opening in the wall 6 of the mixing chamber 7 and bears a flange 101, which is secured to the wall of said casing, the inner end of said atomizer projecting slightly into the mixing chamber 7 and having a relatively small central opening 103 through which communication is established between the atmosphere and the interior of the mixing chamber.

A shutter 104 controls the opening and closing of the opening 103, and is secured to the inner end of a rod 105 which is journaled in perforation in transverse walls or partitions 106 of the atomizer 100, a lever 107 being secured to the outer end of said rod and having a connection with suitable means (not shown) for operating same from the dashboard to open and close the opening 103. The outer transverse wall or partition 106 has an opening 108 and the inner transverse wall or partition 106 contains a plurality of perforations 109 so that, when the shutter 104 is moved to uncover the

opening 103, the suction stroke of each piston of the engine will draw air through the opening 108, perforations 109, and opening 103 into the mixing chamber, so as to draw gasolene from the upper end of a tube or jet 110 into the latter. The upper portion of the jet 110 extends substantially horizontally through the opening 108 and, also, through a perforation 109, so that its end alines with the opening 103 at a slight distance from the shutter 104, as depicted in Fig. 13, to make the gasolene in said jet sensitive to the slightest vacuum in the mixing chamber, and the lower portion extends downwardly from said atomizer and connects at its lower end with a gasolene receptacle or cup 111 at a point adjacent to the bottom of the latter, said receptacle being borne by the flange 101 of said atomizer.

A hollow cap 112, which is preferably cylindrical closes the upper end of the receptacle 111, and is provided with an outwardly turned flange 113, from which an externally screw-threaded flange 114 extends downwardly to fit in the upper end of said receptacle, the flange 113 having an aperture 115 to maintain atmospheric pressure in said receptacle.

A plug 116 closes the lower end of the cap 112 and contains a vertical opening 117 through which the stem 118 of the valve 119 extends, and the lower part of this opening is enlarged and contains a seat 120, against which said valve seats upwardly, said plug having a plurality of passages 121 to allow the gasolene to flow from said cap into the enlarged lower portion of said opening. The stem 118 extends upwardly from the valve 119 into the cap 112 and, also, downwardly from said valve into the receptacle 111, its lower end being reciprocatively guided in an opening 122 in the bottom of the latter.

A float 123 is reciprocatively mounted on the stem 118 within the receptacle 111, so that its upward movement will be limited by the valve 119 and its downward movement will be limited by a collar 124 borne by said stem near the bottom of the latter, and said float is adapted to actuate said valve to open and close the opening 117 in the plug 116 to maintain the gasolene at a substantially uniform level in the receptacle 111 and jet 110. The upper end of the stem 118 terminates a short distance below the top of the cap 112 and bears a head 125 to which the upper end of a sleeve 126 is soldered or otherwise secured. This sleeve 126 is adapted to slide vertically with the stem 113 within the cap 112 and forms a compression chamber which is closed at the top and open at the bottom, being corrugated longitudinally, as shown in Figs. 13 and 14, so as to allow the gasolene to pass freely between the walls of the sleeve and the cap as well as into the open bottom of said sleeve. By this arrangement, equal pressure is maintained above and below the head 125 of the stem 118, the sleeve having such capacity that, as the variable pressures of the fuel in the cap 112 increase or decrease, the compression in the valve sleeve 126, also, increases or decreases, the buoyancy of which valve sleeve 122 equalizes the fuel pressure upon the valve 119, thus permitting the valve to be closed by the buoyancy of the float 123, when the latter rises with the gasolene in the receptacle 111, and to be opened by the weight of the float 123, when same descends with the gasolene in the receptacle 111 sufficiently to rest upon the collar 124. In this way, the gasolene is maintained at substantially a uniform level in said receptacle and in the jet 110.

From the foregoing description, the operation of the carbureter will be largely evident, but may be summarized as follows:

In order to start the engine, the throttle-valve 43 and the check-valve 19 are moved to low speed positions in the manner hereinabove described and the lever 107 is actuated to move the shutter 104 away from the opening 103 in the inner end of the gasolene atomizer 100, thereby subjecting the latter to the vacuum in the mixing chamber 7 and, at the same time, detracting some of the vacuum from the kerosene atomizer 53, with the result that, on account of the gasolene being lighter than the kerosene, the vacuum in the mixing chamber draws a relatively greater amount of atomized gasolene from the gasolene atomizer than atomized kerosene from the kerosene atomizer into the mixing chamber. This introduction of atomized gasolene into the mixing chamber makes a rich mixture which facilitates the starting of the engine. The gasolene atomizer 100 is left open until the engine has run for a sufficient length of time to obtain heated air for the mixing chamber and, also, to heat the inner walls of the manifold sufficiently to prevent condensation of the kerosene mixture, whereupon the lever 107 is actuated to cause the shutter 104 to close the opening 103, thereby cutting off the gasolene atomizer and allowing only atomized kerosene to be drawn into the mixing chamber with which to run the engine at various speeds by the proper manipulation of the throttle-valve 43 and check-valve 19 as hereinabove described.

It should be understood that, if desired, the auxiliary starter may be omitted entirely and gasolene or any other suitable hydrocarbon may be used for fuel instead of kerosene.

Various changes in the details of construction and arrangement of parts may be made without departing from the nature and spirit of the present invention.

I claim:

1. In a carbureter, the combination with a casing having an air-inlet, an outlet and an opening in its bottom, and containing a central mixing chamber, which communicates with the outlet and is open at its bottom to receive air from the inlet, of a fuel atomizer extending through said opening into the bottom of the mixing chamber, and means for removably holding said atomizer in place including an inwardly-projecting lug located in said opening, and a lateral projection borne by said atomizer for overlapping engagement with said lug.

2. In a carbureter, the combination with a casing having an air-inlet, an outlet and an opening in its bottom, and containing a central mixing chamber, which communicates with the outlet and is open at its bottom to receive air from the inlet, of a fuel atomizer extending through said opening into the bottom of the mixing chamber, and means for removably holding said atomizer in place including an inwardly projecting lug located in said opening, a lateral projection borne by said atomizer for overlapping engagement with said lug, and a stop borne by said lug for engagement with said projection.

3. In a carbureter, the combination with a casing having an air-inlet, an outlet and an opening in its bottom, and containing a central mixing chamber, which communicates with the outlet and is open at its bottom to receive air from the inlet, of a fuel atomizer extending through said opening into the bottom of the mixing chamber, and means for removably holding said atomizer in place including an inwardly-projecting lug located in said opening, a lateral projection borne by said atomizer for overlapping engagement with said lug, and a stop borne by said lug for engagement with said projection, one end of said projection being provided with a bevel on the lower side thereof.

4. In a carbureter, the combination with a casing having an air-inlet and an outlet and containing a central mixing chamber, which communicates with the outlet and is open at its bottom to receive air from the inlet, of a fuel atomizer detachably secured to the bottom of said casing and having a dome-shaped discharge end which projects into the bottom of the mixing chamber, a fuel receptacle supported by said atomizer, and an adjustable jet located in said atomizer and having a communication with said receptacle.

5. In a carbureter, the combination with a casing having an air-inlet and an outlet and containing a central mixing chamber, which communicates with the outlet and is open at its bottom to receive air from the inlet, of a fuel atomizer extending through the bottom of said casing into the bottom of the mixing chamber, a fuel receptacle supported by said atomizer having an opening in its bottom, a member secured to the bottom of said receptacle having a passage which communicates with said opening, said member bearing a hollow extension which communicates with said passage and projects upwardly into said atomizer, and a jet adjustably supported in said extension and having a lateral orifice which communicates with the interior of said extension, said extension having its wall spaced from that of said atomizer for the passage of air through the latter.

6. In a carbureter, the combination with a casing having an air-inlet and an outlet and containing a central mixing chamber which communicates with the outlet and is open at its bottom to receive air from the inlet, of a hollow member depending from the bottom of said casing, a fuel atomizer removably supported in said member and having a dome-shaped discharge end which projects into the bottom of the mixing chamber, a fuel receptacle supported by said atomizer, an adjustable jet located in said atomizer and having a communication with said receptacle, a fuel chamber located in said casing having a connection with a fuel-supply and, also, having an outlet which opens into said receptacle, a valve controlling the outlet of said fuel chamber, a float reciprocatively mounted on said hollow member, and means operative by said float for actuating said valve.

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

JOSEPH V. HENLEY.

Witnesses:
NANCY C. THOMAS,
WALTER C. GREELS.