

Nov. 9, 1926.

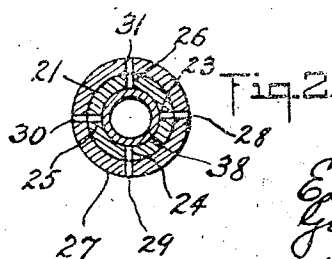
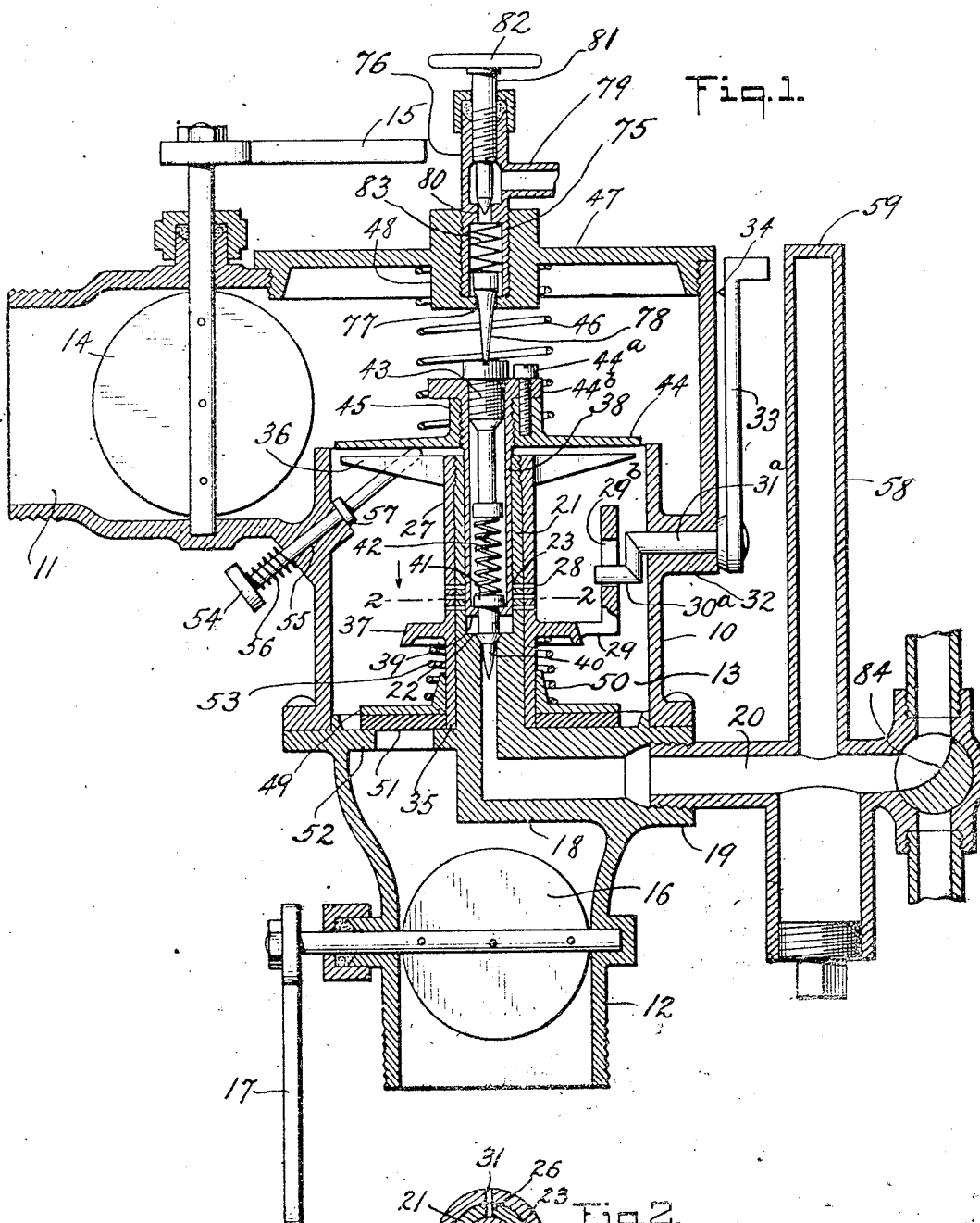
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E. F. ABERNETHY ET AL

CARBURETOR

Filed Feb. 15, 1918

2 Sheets-Sheet 1



WITNESS:

[Signature]

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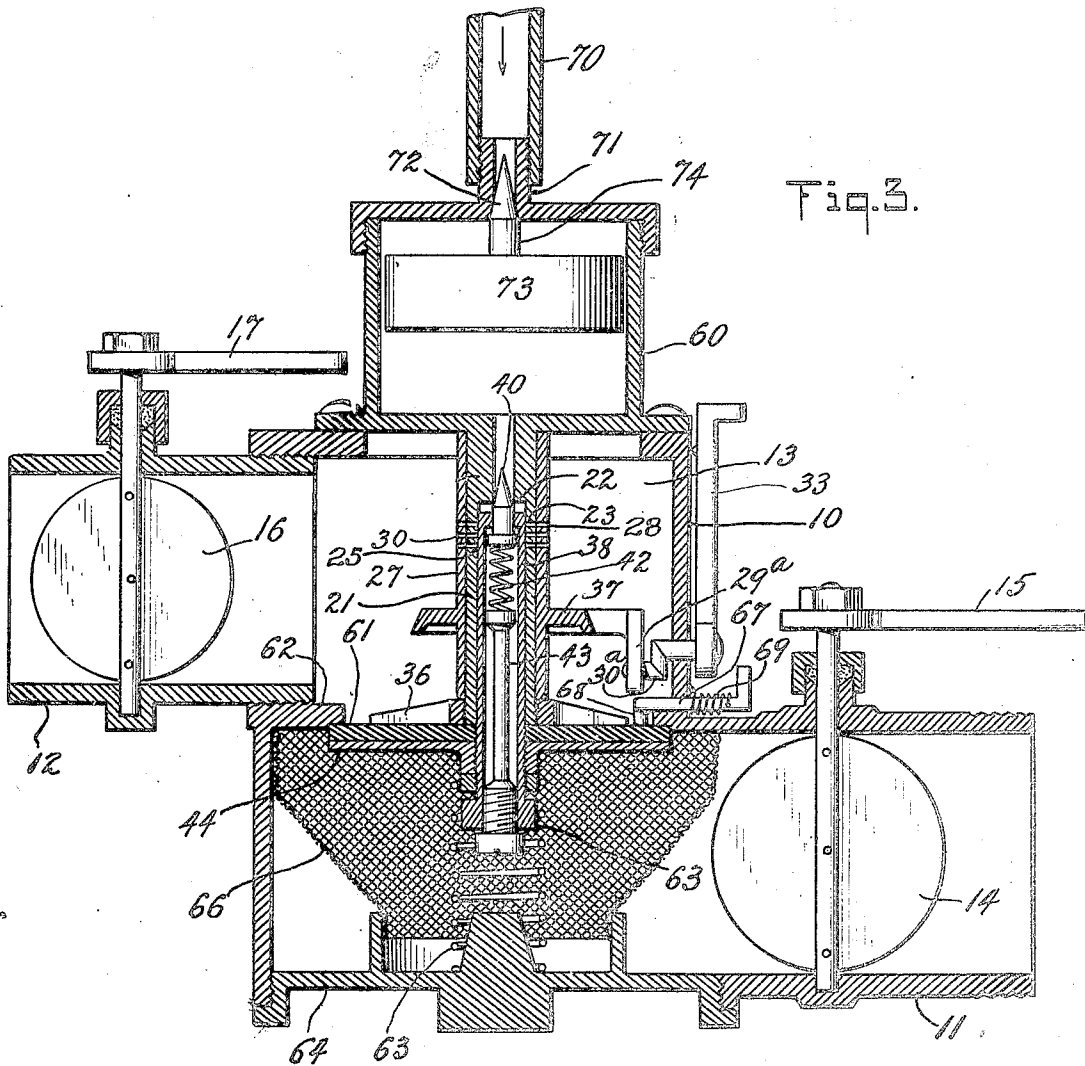
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2 Sheets-Sheet 2



WITNESS:

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UNITED STATES PATENT OFFICE.

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MARGARET E. ABERNETHY ADMINISTRATRIX OF SAID EDWIN F. ABERNETHY,
DECEASED.

CARBURETOR.

Application filed February 15, 1918. Serial No. 217,315.

This invention is a carburetor or mixer for use in connection with internal combustion engines.

Among other purposes, the invention has for its objects, first, to provide, in connection with an automatically-operated suction-element, certain means adapted to vary the quantity of liquid combustible adapted to be admitted upon each opening movement or stroke of said suction-element, said liquid-varying means being operable manually and at a period when the suction-operated element is in motion, whereby the desired adjustment or operation is or may be effected without stopping the movement of the parts; second, to spread or diffuse the liquid combustible in the path of the inflowing air in such manner that the liquid will become absorbed in or taken up by the air and result in the production of a vapor the properties of which are such, owing to the combination of the oxygen present in the air with the carbon and other agents contained in the liquid, as to attain a desired perfect combustion in the engine cylinders; third, to effect a prompt flow of the liquid combustible to the mixer or carburetor and to insure a full and free supply of the liquid thereto; and, fourth, to so organize the elements of the apparatus as to produce a simple, compact, efficient and economical device.

One part of the invention consists in the combination with a relatively fixed tubular member provided with a series of liquid ports; of a second tubular member likewise provided with a series of liquid ports, and means for imparting a rotative movement to the second tubular member in order to effect a variation in the area of the ports through which the liquid combustible is adapted to flow, which variation in the area of the ports is obtained while the device is in service or it may be effected when at rest, whereby provision is made for securing a desired regulation in the supply of the liquid combustible, as well as a distribution of said combustible into the air flowing through the carburetor.

A further feature of the invention consists in the combination with said relatively fixed tubular member provided with an internal valve seat positioned adjacent to a series of liquid eduction ports, of a tubular member reciprocable within said relatively

fixed member so as to open, more or less, of said liquid eduction ports proportionately to the speed of the engine, a needle valve arranged to occupy said seat and to shut off the flow of liquid combustible to said ports, a spring cooperating with the needle valve and the reciprocatory tubular member so as to retain the same under yielding pressure, means operable at will for effecting a variation in the spring action, and a suction member carried by the reciprocatory tubular member for imparting movement to the latter and to the needle valve when the engine is in service, said suction member being preferably in the form of a disk subjected to light spring tension opposed to the flow of air through the main chamber of the carburetor or mixer.

Another feature of the invention consists of means preferably in the form of an air chamber connected with the line of liquid feed, for insuring an ample flow at all times of the liquid combustible to the carburetor. It will be appreciated by those skilled in the art that in carburetors of this type the flow of the liquid combustible is more or less intermittent, being controllable by the opening and closing of the eduction ports, which operations recur rapidly, dependent upon the speed of the engine; and, further, that the inertia of the liquid column interferes to an appreciable extent with the desired full and ample supply of such liquid to the carburetor, particularly in cases where the fuel tank is remote to the carburetor so as to make it necessary to employ a feed pipe of considerable length, which feed pipe is usually of small diameter so that considerable friction is encountered by the contact of the liquid column with the interior surface of said pipe. To overcome these objections, we employ means overcoming the inertia of the liquid column within the feed line, said means operating to exert pressure upon the liquid for feeding the latter with a constant flow to the carburetor, regardless of the intermittent opening and closing of the eduction port. Said means is embodied in the form of an air chamber positioned in close proximity to the carburetor and extending upwardly from the feed line so that the liquid combustible, owing to the "head" given to it while flowing from the tank to the carburetor, is free to rise within the air

chamber and will operate to compress air therein, which confined air serves the functions of a cushion in checking the tendency of the liquid to flow intermittently and the pressure of which confined air upon the liquid stream secures the important function of an ample supply of liquid combustible to the carburetor under all conditions of service.

Other features and advantages of the invention will be pointed out in the annexed description taken in connection with the drawings, wherein two constructional forms of the invention are illustrated.

Fig. 1 is a vertical sectional elevation through a device embodying this invention.

Fig. 2 is a horizontal section taken in the plane of the dotted line 2—2 of Fig. 1 to illustrate the ports in the relatively fixed tubular member and the shiftable tubular member whereby the area of the liquid inlet is adapted to be varied by an adjustment of one tubular member with respect to the other tubular member.

Fig. 3 is a vertical sectional elevation illustrating another constructional form wherein a feed chamber is positioned over the liquid inlet to the device.

Referring more particularly to the construction of Figs. 1 and 2, the device embodies a casing 10 provided with a suction connection 11 and an air inlet connection 12, said connections 11, 12 being adapted for communication with an air chamber 13 provided by casing 10. Suitable means are employed for attaching the suction connection 11 to an engine or motor either directly or indirectly, and in this connection is positioned a throttle valve 14 operated in any suitable way, as by an arm 15. The air inlet nipple 12 is shown as depending from the casing 10, the same being normally open to atmosphere, but if desired a throttle valve 16 may be used in connection with the nipple 12 for closing said air inlet more or less, as may be desired, said throttle 16 being operable by suitable means, as by the arm 17. A liquid combustible is supplied to the device by a pipe line, one member of which is indicated at 18, said pipe line member 18 having a nipple 19 to which is connected the pipe line 20. The member 18 extends into the chamber 13 of the device, and said member is formed with an upstanding tubular member 21, the latter being positioned axially within the chamber 13 and occupying a relatively fixed position therein, whereby air admitted to chamber 13 is free to flow all around the tubular member 21. Said tubular member 21 is provided interiorly with a valve seat 22, and above said valve seat the member 21 is shown as having a number of series of ports 23, 24, 25, 26, said ports being positioned radially in the tubular member, as shown in Fig. 2, whereby the

liquid combustible is distributed into the air flowing around the tubular member 21. As shown, there are four series of ports, see Fig. 2, three being in each series, see Fig. 1, although it is to be distinctly understood that the number of ports in the series, and the number of series of ports, may be varied as desired.

With the tubular member 21 cooperates a second tubular member 27, the latter being provided with a number of series of ports 28, 29, 30, 31, corresponding in number to the ports of the member 21.

In one position of member 27 relatively to fixed member 21, all the ports 28 to 31 are out of register with the corresponding ports 23 to 26 of said fixed member 21, thus closing the outlet by which the liquid combustible is fed to the chamber 13; but the outlet may be opened, and the area of the outlet regulated, by a partial rotative movement of member 27 relatively to member 21, which partial rotative movement is capable of variation by a nicety of adjustment characterizing our invention and, further, by the fact that such adjustment may be effected with the greatest ease while the engine is running and during the operation of the moving parts of the carburetor. The rotative member 27 is adapted to be turned a given angular distance so as to bring the ports 28 to 31 into full register with the ports 23 to 26 of member 21, so as to obtain a wide opening of the liquid outlet and secure a maximum feed of the liquid combustible to the chamber 13; but it is apparent that said member 27 may also be rotated for a lesser angular distance so as to bring its ports 28 to 31 only partially into register with ports 23 to 26, thus cutting down the area of the liquid outlet; and, furthermore, this partial register of the ports in one member with the ports in the other member may be further controlled by the nicety in the rotative adjustment of the member 27, whereby the desired variation is obtained in the area of the liquid outlet in order to obtain the necessary regulation in the feed of liquid combustible to the air chamber 13. It is preferred to impart rotative movement to member 27 to effect the variation in the registration of the ports, and to this end member 27 is provided with an arm 29 having a slot 29^b which receives the crank 30^a of a rockshaft 31^a, mounted in a suitable bearing 32 provided on the casing 10. Means are provided for imparting rocking motion to the crank 30^a so as to impart rotative movement to the tubular member 27, and as shown said operating means is in the form of a lever 33 attached to a protruding end portion of rockshaft 31^a, said operating lever being provided with a locking stud 34 adapted for engagement with the casing 10 so as to preclude accidental movement of the

arm 33 under the vibration of the engine and thus retain the tubular member 27 in the desired adjusted position. The tubular member 27 is in the form of a sleeve fitting snugly and accurately to member 21, the lower part of the sleeve 27 having a step bearing at 35 upon the fixed horizontal pipe line member 18. Said member 27 is provided with a spider 36 shown in Fig. 1 consisting of a series of arms extending radially from the upper portion of the member. In addition to the spider and the series of ports, the tubular member 27 carries a liquid diffusing member 37, shown as a disk integral with said member. The diffusing disk is positioned on the member below the ports therein so that liquid combustible flowing out of the ports will spread over the member 37 and be thereby diffused into the path of the air flowing through chamber 13.

38 is a third tubular member, the same being in the form of a tube or sleeve sliding within the fixed tubular member 21. Sliding movement is given to the third member or sleeve by the suction operated member or disk 44, said sleeve 38 operating as an internal valve in opening and closing the ports 23 to 26 of member 21 proportionately to the speed of the engine and the air flowing through chamber 13. The wall of the sleeve at the lower part thereof is imperforate and said sleeve is fitted accurately within the tubular member 21 so as to slide relatively to the ports 23 to 26, thus performing the functions of a valve in closing said ports when the sleeve is lowered and in opening said ports, more or less when the sleeve is raised, the degree of such elevation being dependent upon the speed of the engine.

Said reciprocating sleeve carries a needle valve 40, the upper part of which is enlarged to produce a head 41 which rests upon the shoulder 39 so that the needle valve is connected with the internal sleeve 38 for reciprocation therewith. The needle valve is slidable relatively to the internal tube and said valve is under the pressure of a coiled spring 42, the latter being encased within the tube 38 and movable with said tube and the needle valve. Said spring 42 is seated against the lower end of a stem 43, the latter being screwed into the upper part of the sleeve 38, said stem 43 extending through and protruding beyond the upper part of the sleeve 38.

The internal tube 38 and the needle valve are moved up and down by the suction from the engine, the air flowing through chamber 13 acting against the suction operated member 44, herein shown as a disk having a hub 45 which is screwed upon an externally threaded upper portion of the internal tube 38, whereby the disk 44 and the tube 38 are connected rigidly for movement one with the other. Said disk 44 is adjustable upon the

internal tube by screwing it on the thread, but displacement of the disk with respect to the tube is precluded by a screw 44^a which passes through a headed part 44^b of said tube 38 and is received within one of a series of openings tapped in the hub 45 of the disk, whereby the screw can be unseated to permit adjustment of the disk, after which the screw is replaced for locking the disk against rotative movement upon the tube. The diameter of the said disk 44 is a trifle less than the diameter of the chamber 13 so that the disk is positioned directly in the path of the air flowing through the chamber 13 and into the suction connection 11. The parts 38, 44 and 40 are adapted to descend by gravity in order to seat the needle valve within the liquid inlet afforded by the member 18, but in order to increase the sensitiveness in the action of the specified parts it is preferred to use a light coiled spring 46, the lower end portion of which is seated upon the disk 44 so as to press it downwardly toward its seat afforded by the upper end portion of the casing 10 or upon the spider 36. The upper part of the casing 10 is closed by a head 47 shown as having a stud 48 affording a means for engagement with the upper part of the spring 46, said head 47 being removable at will in order to obtain access to the internal working parts of the device.

The inlet connection 12 opens directly into the chamber 13, but it is preferred to use an air disk 49 between said chamber 13 and the connection 12. This air disk is shown as having a tubular guide 50 which is fitted for free sliding movement upon the lower portion of the tubular member 27, and upon the under side of the air disk 49 is a packing 51 composed of any suitable material. The disk finds a seat on a shoulder 52 extending inwardly of the casing 10, said disk being normally pressed to its seat by the action of a spring 53 loosely coiled around the lower part of the tubular member 27 and finding a bearing against the diffusing disk 37. The suction from the engine induces the flow of air through the connection 12, chamber 13 and connection 11, the inflowing air pressing upwardly on the disk 49, and the suction-operated disk 44, but when the disk 49 is closed by the spring 53, the packing 51 of said disk 49 is pressed against the seat 52, thus precluding leakage of any liquid combustible which may flow over the diffusing disk 37.

It becomes important at times to prime the mixer, and in this device priming is accomplished by operating a priming stem 54 which is slidably fitted in a bearing 55 of the casing 10. The priming pin occupies an inclined position with its upper end in contact with the under side of the suction disk 44. The priming pin is held in a desired position by a spring 56, but movement of the priming pin in one direction is arrested by

a collar 57 adapted for contact with the bearing 55.

The means for overcoming inertia in the liquid feed and for insuring an ample supply of liquid to the carburetor, is embodied, preferably, in an air chamber 58. As shown, said chamber is tubular in form, one end thereof being closed in an air-tight manner by a head 59, said tube-forming chamber being unitary with or attached to the feed line 20 in close proximity to the carburetor or the intake member 19 thereof. This chamber has free communication with the liquid passage in the feed line 20, so that the liquid fuel is free to rise within the chamber; and in view of the fact that the liquid fuel is under a certain "head" or pressure as it flows from the tank to the carburetor, the rise of the fuel within the chamber 58 compresses the air confined in said chamber between the closed head 59 and the level of the liquid column. A quantity of the liquid fuel is thus held in reserve adjacent to the carburetor and within the air chamber, but the efficiency of the liquid feed is increased, and to a material extent, by the pressure upon the liquid column of the air confined within the chamber, which confined air acts also as a cushion to the liquid fuel, as a means for checking the tendency of the liquid to pulsate owing to the intermittent opening and closing of the intake to the carburetor, and as a medium for exerting pressure upon the liquid in a manner to feed the same continuously (instead of intermittently) to the carburetor.

The embodiment of the invention illustrated in Fig. 3 is similar in many respects to the device heretofore described and shown in Figs. 1 and 2, but in said Fig. 3 the liquid combustible is fed through a supply chamber 60 positioned upon the casing 10. Within the chamber 13 of this casing is the relatively fixed tube 21 having an internal valve seat 22 and a series of ports 23 to 26, inclusive. Fitted snugly upon the tube 21 is the outer tube 27 provided with the ports 28 to 31 inclusive, and this outer tube carries the diffusing disk 37 and is provided with a crank arm 29^a with which is connected the crank 30^a operated by the lever 33, all as heretofore described. Reciprocating within the fixed tubular member 21 is the internal tube 38 provided at its lower portion with the suction-operated disk 44, the latter being shown as having a packing 61 on the upper face, which packing 61 is adapted to contact with a seat afforded by an internal flange 62 of the casing 10. The packing 61 is in contact also with the spider 36 when the disk 44 is pressed to its seated position by a spring 63, the lower part of which rests upon the removable cap 64. The casing 10 is provided with a suction connection 11 having the throttle 14, and air is supplied to the

chamber 13 by a connection 12 provided with the throttle 16. The reciprocating tube 38 carries the needle valve 40 which is pressed to its seat 22 by a spring 42, and cooperating with this spring is an adjusting stem 43 which is screwed into the collar 65 provided on the lower end of the reciprocating tube 38.

The liquid combustible supplied through the ports of the tubes 21, 27 flows upon the diffusing disk 37 and overflows upon the packing 61 of the suction disk 44, so that said liquid combustible escapes from the chamber 13 into the lower part of the mixer. Such escaping fluid is caught by a wire gauze cage 66, encased within the lower chamber of the casing 10 and positioned in the path of the flow of air from the connection 12, chamber 13 and connection 11. The device may be primed by the operation of a priming element shown as a rocking pin 67, having an angular end 68 held free from contact with the disk 44 by a coiled spring 69.

The chamber 60 is supplied with the liquid combustible through a pipe 70, the lower part of which is attached to a nipple 71 having an internal valve seat 72. Within the chamber 60 operates a float 73 provided with a needle valve 74 adapted to occupy the seat 72 so that when the chamber 60 is filled with liquid combustible to a desired level the valve 74 occupies the seat 72 and thus shuts off the further inflow of liquid combustible from the pipe 70 into chamber 60, but when the liquid combustible drops below a predetermined level in the chamber 60, then the float 73 descends and opens the valve 74, thus establishing a further flow of liquid combustible to the chamber until the desired level of liquid combustible therein is restored.

In Fig. 1 of the drawings there are shown means for feeding, in regulated quantities, a fluid other than the liquid combustible, which other fluid is supplied for admixture with the carbureted vapor for the primary purpose of increasing the volume thereof, and said Fig. 1 illustrates, also, means such as a three-way cock 84 for feeding different kinds of liquid combustible such as gasoline and kerosene to the concentric tubular members of the carburetor or mixer in order to render such different liquids available for use in connection with air to produce the vapor required in the operation of the motor.

The head 47 of casing 10 is shown as having a threaded socket 75, into which is screwed a valve member 76, the bottom wall of said socket 75 being provided with an aperture 77 which affords an inlet port and a seat for a needle valve 78. Said valve member 76 is provided intermediate its ends with a feed pipe 79 and with an internal shoulder 80, the latter being formed with a port and a valve seat. Operating within the upper part of valve member 76 is a needle valve 81 having a threaded connection with

member 76 and provided on its upper end with a knob or wheel 82 whereby the valve 81 is rendered adjustable manually for regulating the feed of the fluid supplied through pipe 79. The other needle valve 78 is operated automatically whereas valve 81 is manually controllable, such automatic action of valve 78 being brought about by a spring 83 and by so locating the lower end of valve 78 that it is in the path of or in contact with the head or end of stem 43, whereby the lifting movement of suction operated member 44 and stem 43 raises the valve 78 to unseat it and admit the fluid through port 77, whereas the spring 83 presses valve 78 to its seat and closes port 77 upon the downward movement of members 43, 44.

It may be stated that it is preferred to feed a liquid, such as water, through pipe 79 and port 77, the liquid so supplied being regulated by valve 81 so as to feed relatively small quantities to the chamber 13 for admixture with the vapor and the periods of such inlet or feed being intermittent and controllable by valve 78 actuated by the movement of parts 43, 44 which act also to open and close the combustible feed valve 40. Experience shows that water, when automatically supplied in small quantities, mixes with the vapor and is carried into the engine valve chests and cylinders so as to become vaporized by contact with the hot surfaces of the engine, as a result of which the additional vapor thus supplied increases the volume of the mixture and effects a saving in the quantity of the liquid combustible, thus attaining economy of fuel; but in this connection it is to be noted that the additional liquid and resulting vapor secures another and important function, i. e. the reduction to a marked degree or the substantial elimination of carbon from the valve chests and cylinders of the engine, which is due, probably, to the presence of hydrogen in the mixture.

The feed pipe 20 is shown as having a three-way cock 84 to which are attached pipes for feeding different liquid combustibles such as gasoline and kerosene. In one position, the cock may be closed for cutting off the feed; in a second position, one port of said cock is open for gasoline to feed when valve 40 is opened so as to furnish the energy required for starting and operating the engine, whereas in the third position the feed of gasoline is shut off and the port for the inlet of kerosene is opened, thus making kerosene available as the fuel when the engine is heated sufficiently.

The operation of feeding water to the mixture within the chamber secures an important function, i. e. the steam resulting from the vaporization of water being non-combustible, has a tendency to appreciably lower the temperature of the engine, or to cool the

same, and in addition thereto such steam precludes the formation of incandescent sparks from the carbon which are liable to create precombustion of the ignitable charges of combustible vapor.

In addition to performing the functions of precluding the escape from the air chamber of the liquid combustible, and of a means for diffusing said combustible in the path of the air, the member 49 serves another important function, i. e. as a check valve to preclude a backfire from the engine through the intake manifold. It will be noted that said valve member is positioned to close the air intake to the chamber 13, and that it is normally held in a closed position by gravity or under light spring tension, so that should an ignited gaseous charge escape from the engine or create a backfire, such ignited fuel cannot escape through the air chamber or the inlet thereto, thus overcoming the possibility of setting fire to accumulations of oil or grease at the base of the engine.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a device of the class described, the combination of a relatively fixed tubular member provided with ports, a second tubular member provided with ports, said second tubular member being free from fixed engagement with the relatively fixed member and said second tubular member being shiftable at will with respect to said fixed member, suction operated means for admitting and shutting off the feed of fuel to the ports of said tubular members, and a manual operating device independent of said suction-operated means for shifting the second tubular member relatively to the first tubular member whereby the area of the ports may be manually controlled independently of the motion of the suction-operated means.

2. In a device of the class described, the combination of a relatively fixed tubular member provided with a plurality of series of ports, a second tubular member provided with a plurality of series of ports; said second tubular member being positioned in such relation to the first tubular member that the ports of the two said members are in partial registration to attain a fuel inlet the area of which is determined by the number of ports in register, said second tubular member being free from fixed engagement with the relatively fixed member and said second tubular member being movable at will with respect to the first member, suction-operated means for admitting and shutting off the feed of fuel to said fuel inlet constituted by the ports in register, and a manually operable device disconnected from and independent of the suction-operated

means, whereby the second tubular member may be shifted at will with respect to the first tubular member so as to vary the number of ports in register and thereby increase or decrease the area of the fuel inlet irrespective of the motion of the engine-operated means.

3. In a device of the class described, the combination with a relatively-fixed tubular member provided with ports, a second tubular member free from fixed engagement with the relatively fixed member and said second tubular member being rotatable with respect to said fixed member, said second tubular member being provided with ports, suction-operated means for closing the feed of a liquid combustible to said ports, and means for imparting to said second tubular member rotative movement with respect to said first tubular member for effecting a variation in the area of the liquid inlet afforded by the registration between said ports of the second tubular member with the ports of the first tubular member.

4. In a device of the class described, the combination of a plurality of concentric tubular members each provided with a plurality of ports, a reciprocatory valve member positioned within said tubular members, for opening and closing the ports therein, a spring actuated needle valve carried by said reciprocatory valve member for movement therewith, said needle valve being movable relatively to the valve member and independently thereof as said needle valve approaches its seat provided in a fuel inlet to open and close the latter separately from the opening and closing of the ports by the valve member, a suction-operated disk for imparting movement to said reciprocatory member, and means independent of the reciprocatory member and said disk and operable independently of the action thereof for imparting to one of said tubular members rotative movement with respect to the other of said tubular members and thereby to vary the registration of the ports between said members and to vary the area of the liquid inlet afforded by said registering ports of the tubular members.

5. In a device of the class described, the combination of a plurality of concentric tubular members each provided with a plurality of ports, a reciprocatory valve member positioned within said tubular members, a needle valve movable with said reciprocatory member, said needle valve operating to shut off the inflow through a fuel inlet of the fuel to be supplied through said ports, a spring acting against said needle valve whereby said needle valve when seated is adapted to yield to the further movement of the reciprocatory member, engine operated means for imparting movement to said reciprocatory valve member, and a sep-

arate operating means for imparting to one tubular member rotative movement with respect to the other tubular member for the purposes set forth.

6. A carburetor embodying a chamber provided at its bottom with an air inlet, a tubular member within said chamber, said tubular member being provided intermediate its ends with fuel ports, a diffusing member supported by said tubular member below and adjacent to the fuel ports thereof, and a bodily movable disk slidably fitted on the tubular member and movable relatively to the air inlet to said chamber, the diameter of said disk exceeding the diameter of the diffusing member and said disk being movable under air pressure relatively to said diffusing member.

7. A carburetor embodying a chamber provided with an air inlet, a tubular member extending upwardly from said air inlet and within said chamber, said tubular member being provided intermediate its ends with fuel ports, a diffusing member supported on the tubular member and positioned below the fuel ports adjacent thereto, a disk slidably fitted on the tubular member and below the diffusing member, the diameter of said disk exceeding the diameter of the diffusing member and said disk being movable by the flow of air through the chamber relatively to the diffusing member, and means acting on the disk for seating the latter to close the air inlet to said chamber.

8. A carburetor embodying a chamber provided at its bottom with an air inlet, a tubular member within said chamber and extending upwardly from the air inlet thereto, said tubular member having fuel ports, a diffusing member supported by said tubular member below the fuel ports, the diameter of said diffusing member being less than the diameter of the air inlet to said chamber, a disk fitted slidably on the tubular member and positioned below the diffusing member, the diameter of said disk exceeding the diameter of the air inlet and said disk being movable relatively to the diffusing member by the flow of air through said air inlet.

9. A carburetor embodying a chamber provided at its bottom with an air inlet, a tubular member within said chamber and extending upwardly from the air inlet thereto, said tubular member having fuel ports, a diffusing member supported by said tubular member below the fuel ports, a disk fitted on the tubular member for sliding movement relatively to the tubular member and the diffusing member, said disk being actuated by the flow of air through said air inlet to the chamber, said disk provided with a facing of relatively soft material on the under surface thereof, said disk and its facing being seated upon the bottom of said

chamber for cutting off the outflow of surplus fuel adapted to be spread within the chamber by the diffusing member, and a spring acting on the disk for seating the latter upon the cessation of air flow through said air inlet.

10. A carburetor embodying a chamber provided at its respective ends with an air inlet and a mixture outlet, a tubular member extending within said chamber between said air inlet and the mixture outlet, said tubular member being provided intermediate its ends with a fuel inlet to said chamber, a reciprocatory valve slidable within said tubular member for controlling the flow of fuel through said ports, an air disk attached to the reciprocatory valve member and positioned across the mixture outlet from said chamber, and a second air disk slidably fitted on the tubular member and positioned across the air inlet to said chamber, said first air disk and the second air disk operable by the flow of air through said chamber.

In testimony whereof we have hereunto signed our names.

EDWIN F. ABERNETHY.
GEORGE H. ABERNETHY.