No. 771,985. PATENTED OCT. 11, 1904.

G. KINGSTON.

CARBURETER FOR GASOLENE ENGINES.

APPLICATION FILED AUG. 12, 1903.

NO MODEL.

Fig. 1.

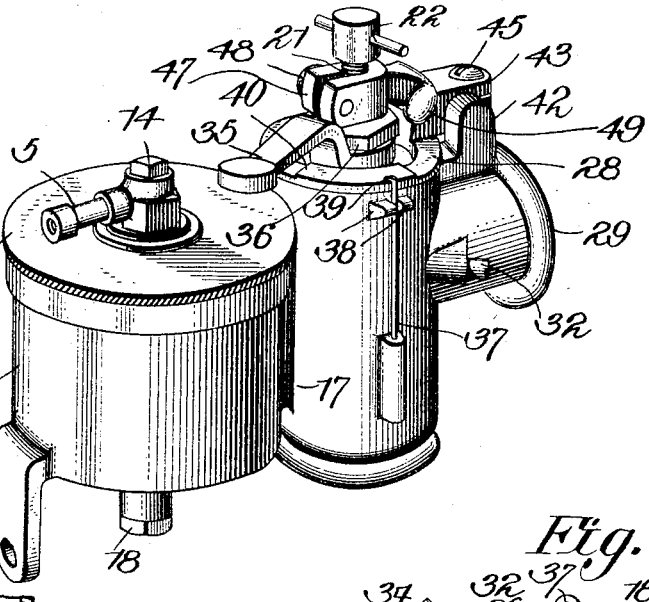


Fig. 4.

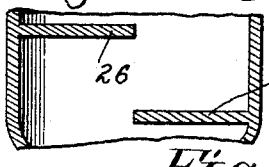


Fig. 3.

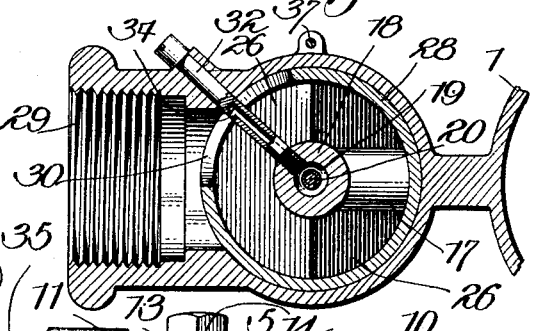
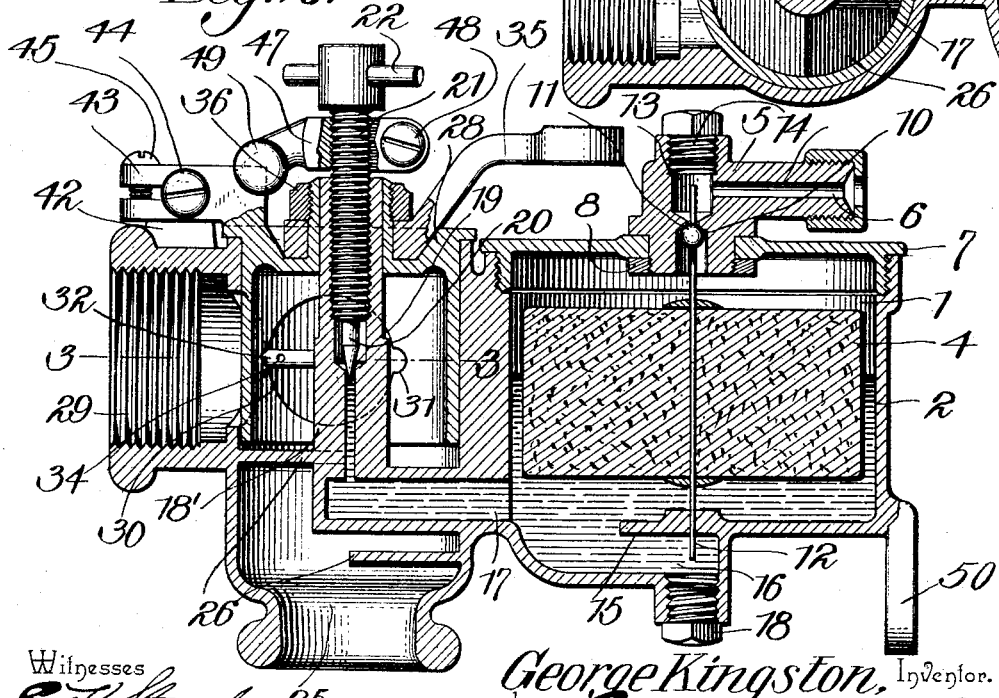


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE KINGSTON, OF KOKOMO, INDIANA.

CARBURETER FOR GASOLENE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 771,985, dated October 11, 1904.

Application filed August 12, 1903. Serial No. 169,283. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KINGSTON, a citizen of the United States, residing at Kokomo, in the county of Howard and State of Indiana, have invented a new and useful Carbureter for Gasolene-Engines, of which the following is a specification.

This invention relates to certain improvements in that general class of carbureters used in connection with explosive-engines and so arranged as to cause the admixture of a small quantity of liquid hydrocarbon with a current of air induced by the suction-stroke of the piston.

The principal object of the invention is to provide a carbureter of simple and economical construction in which the proportion of hydrocarbon to air may be accurately governed, provision being made for accurately adjusting the hydrocarbon-valve and for locking the same in its adjusted position.

A still further object of the invention is to provide a device of this character in which the controlling-valve may be readily removed should it become necessary to cleanse or repair the same, and in this connection a further object is to provide a removable or detachable nozzle, which may be screwed into place from a point outside the main casing and detached to permit cleaning should it become choked from an accumulation of foreign matter.

A still further object of the invention is to provide a carbureter with an adjustable connecting device in order to permit the connecting of the carbureter to an oil-supply tank disposed at any angle to the carbureter-casing.

A still further object of the invention is to provide a carbureter so constructed as to permit of the settling of any matter held in suspension and its removal from a carbureter-chamber in order to avoid frequent choking of the passages and the discharge-nozzle, and, further, to permit of the removal of accumulations from the stem of the inlet-valve in order to render the operation of the latter more certain and positive.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in the novel construction and arrangement of parts hereinafter described, and illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a perspective view of a carbureter constructed in accordance with the invention. Fig. 2 is a longitudinally-sectional elevation of the same. Fig. 3 is a sectional plan view of a portion of the carbureter on the line 3 3 of Fig. 2. Fig. 4 is a detail sectional view of a portion of the carbureter on the line 4 4 of Fig. 3, illustrating the arrangement of the partitions below the mixing-chamber.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

In the main casing 1 of the carbureter is formed a float-chamber 2, that is connected by an inlet-pipe to a suitable tank or other source of gasolene-supply. This chamber contains a float 4, which in the present instance is shown as formed of cork, the cork being preferably coated with shellac or some similar material in order to prevent saturation. At the top of the float-chamber is a pipe-coupling and valve-casing 5, including an upper horizontal member provided with a passage 6 and having means for connecting it to a supply-pipe. The vertical portion of this coupling extends through an opening formed in the casing 1 or in a removable cap or cover 7, that forms the top of the float-chamber, and is held in position by a nut 8, so that the horizontal member 5 may be turned at any angle for convenience in connecting to a supply-tank arranged in any position. The coupling member is provided with a valve-seat 10 to receive a ball-valve 11, carried by a vertically-movable stem 12, that is secured to the float 4, and the upper end of the stem extends into a small chamber 13, that is closed by means of a removable plug 14, the removal of said plug permitting the cleansing of the valve-stem or the removal of deposits from the valve-seat. The lower end of the stem is guided in an open-

ing formed in a horizontal partition 15, that divides the float-chamber from a settling-chamber 16, the latter being disposed below the outlet 17 and serving to receive any foreign matter which may be held in suspension. Access may be had to the settling-chamber and the deposited matter drawn off by removing a plug 18, that is fitted in a threaded opening formed in the bottom of the casing and in direct vertical alinement with the valve-stem, so that the lower portion of the stem may be cleaned without the necessity of removing the valve and its float.

The outlet 17 is connected to a vertical tube 18′, having a contracted passage for the gasolene, the passage terminating in a valve-seat 19, that receives a needle-valve 20, carried by a threaded stem 21, screwing into a threaded opening in the upper portion of the tube and provided with a suitable handle 22 for convenience in adjustment.

Surrounding the tube 18′ is a mixing-chamber forming a continuation of a lower inlet-chamber 25, through which air is drawn to be admixed with the gasolene, a plurality of horizontally-disposed partitions 26 being arranged in the air-chamber in staggered order and forming baffle-plates which will to some extent lessen the noise occasioned by the inrush of air during the suction-stroke of the piston. The upper portion of the chamber is adapted for the reception of a valve 28, that controls the flow of the gas through the cylinder connection 29, said valve being provided with a port 30, which may be turned into alinement with the cylinder connection and opened to a greater or less extent in order to govern the speed of the engine by the quantity of fuel admitted to its cylinder. The port 30 is preferably circular in form, and in its wall is formed a notch 31, adapted for the reception of the nozzle 32, said nozzle being in the form of a short section of tubing threaded at one end and adapted to screw into an opening formed in the tube 18′ at a point above the valve-seat. This tube is provided with a minute discharge-opening 34, and its outer end is preferably provided with a notch for the reception of a screw-driver or similar tool, or it may be non-circular in form to receive a wrench. The outer end of the tube is of course closed, and it extends through an opening formed in the casing in order that it may be conveniently removed and cleaned or repaired.

By regulating the position of the valve 20 the supply of gasolene may be adjusted as desired and the quantity of gas manufactured may be regulated by turning the controlling-valve 28. The tube 18′ extends up through the central or hub portion of the main valve, and to said hub is secured an operating-arm 35, held in place by a suitable nut 36 for convenience in manipulating the valve, and said arm is connected by a link or rod to an operating-lever or such similar device arranged within convenient reach of the operator. The valve is held in its position within the casing by means of a small spring 37, usually secured at its lower end to the outer wall of the casing and at its upper end being guided between a pair of spaced lugs 38, also carried by said casing. The extreme upper end of the spring is bent over to form a finger 39, that engages a segment 40, formed on top of the valve, so that when necessary the valve may be conveniently removed by merely pressing outward on the spring until its holding-finger 37 is beyond the outer wall or flange 40.

In devices of this class it is desirable that the adjustment of the parts be absolute, and for this purpose it becomes necessary to employ means for positively locking the gasolene and the air valves relatively to each other. To the top of the casing is secured a lug 42, and projecting from the air-valve is an arm 43, in which is formed a threaded opening for the passage of an adjusting-screw 44, the inner end of which impinges on lug 42. By turning this screw the extent of closing movement of the main valve may be accurately adjusted, the port being held open to a normal low speed limit. The end of the arm 43 is split, so that after the adjustment is accomplished the screw 44 may be rigidly locked by means of a second screw 45, that clamps the two split portions together.

To provide for the locking of the gasolene-valves and its movement with the air-valve in order that the quantity of gasolene may be proportioned to the quantity of air, I employ a clamping-arm 47, having a split and threaded end portion encircling the threads of the valve-stem 21 and provided with a suitable clamping-screw 48, by which it may be readily locked to said stem when adjusted to proper position. The outer end of the arm rests on the arm 43 and is provided with a pair of spaced depending lugs 49, that embrace the opposite sides of arm 43 in order to insure simultaneous movement of both of the valves.

In the operation of the device oil is admitted to the float-chamber from any suitable supply-point, and the float maintains a constant level of oil by closing into valves 10 when the oil has reached a predetermined height. The oil passes upward to the discharging-nozzle, and as air is drawn through the inlet 25 on the suction-stroke of the piston a partial vacuum will be formed at the discharge-orifice of the nozzle and a jet of gasolene will issue therefrom and mingle with the passing current of air. The arm 35 forms the controlling member, and by turning this to a greater or less extent the operator may control the speed and power of the engine, while a normal low speed limit may be obtained by properly adjusting the position of the arm 43 and the air-valve, to which said arm is connected.

In order to assist in supporting the carbureter, the casing is provided with a depending lug 50 for convenience in securing the device to a bracket or other support.

It is obvious that the controlling mechanism may be employed without the particular form of float and float-chamber herein described and that any suitable means may be employed for feeding the gasolene to the discharge-nozzle without departing from the invention.

Having thus described the invention, what is claimed is—

1. In a carbureter, a mixing-chamber having inlet and discharge ports and provided at one side with an opening, a ported valve arranged within the mixing-chamber, a gasolene-supply pipe extending within the valve, and a removable nozzle member extending through said opening to the gasolene-supply pipe, said nozzle member having its outer end closed and being provided with a port for discharging a spray of gasolene within the mixing-chamber.

2. In a carbureter, a mixing-chamber having inlet and outlet members and provided with a threaded opening, a valve arranged within the mixing-chamber, a gasolene-supply pipe extending within the valve, and a removable nozzle member formed of a section of tubing closed at its outer end and constructed for engagement by a tool, said nozzle member being extended through the threaded opening and connected to the gasolene-supply pipe, substantially as specified.

3. In a carbureter, a mixing-chamber having inlet and discharge ports and being provided with an opening, a ported valve disposed within the mixing-chamber, a gasolene-supply pipe extending within the valve, means for controlling the discharge of gasolene from said pipe, and a nozzle member extending through the threaded opening and the port of the valve, said nozzle member being connected to the gasolene-supply pipe and having an orifice for the discharge of a jet of gasolene across the path of a current of air passing through the mixing-chamber.

4. In a carbureter, a mixing-chamber having inlet and discharge ports, a valve adjacent to the discharge-port, a valve having a port of an area approximately equal to that of the discharge-port, a gasolene-supply pipe extending within the mixing-chamber, a nozzle member extending in a line substantially radial of the casing from the gasolene-supply pipe to the wall of said chamber and passing through the port of the valve, one wall of said port being provided with a notch or recess for the reception of the nozzle member when the valve is in full-open position.

5. In a carbureter, a float-chamber provided at the bottom with a settling-chamber, a float, a valve, a valve-stem, a removable plug disposed in vertical alinement with the valve-stem and forming a closure for the settling-chamber, the lower wall of the float-chamber proper being continued beyond the vertical center of the chamber and having a guiding-opening for the reception of the lower end of the valve-stem.

6. In a carbureter, a float-chamber, having a horizontal partition, a float-valve having a stem extending through a guiding-opening in said partition, a settling-chamber divided from the float-chamber by said partition, and a discharge-opening arranged in vertical alinement with the valve-stem.

7. In a carbureter, a float-chamber, a float therein, a coupling member swiveled to the central upper portion of the float-chamber and having a valve-seat, a horizontal extension carried by the coupling member and adjustable therewith to any angular position in a horizontal plane for connecting the float-chamber to a source of supply, a valve-stem carried by the float and extended upward into said coupling member, a valve carried by the stem at a point below the extreme upper end thereof and adapted to close against said valve-seat, and a removable plug adapted to a threaded opening at the top of the coupling member, thereby to permit access to the valve and seat without removing said coupling member.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE KINGSTON.

Witnesses:
F. L. KINGSTON,
RALPH J. CRANE.