

J. A. OSTENBERG.
CARBURETER.
APPLICATION FILED SEPT. 13, 1915.

1,180,939.

Patented Apr. 25, 1916.

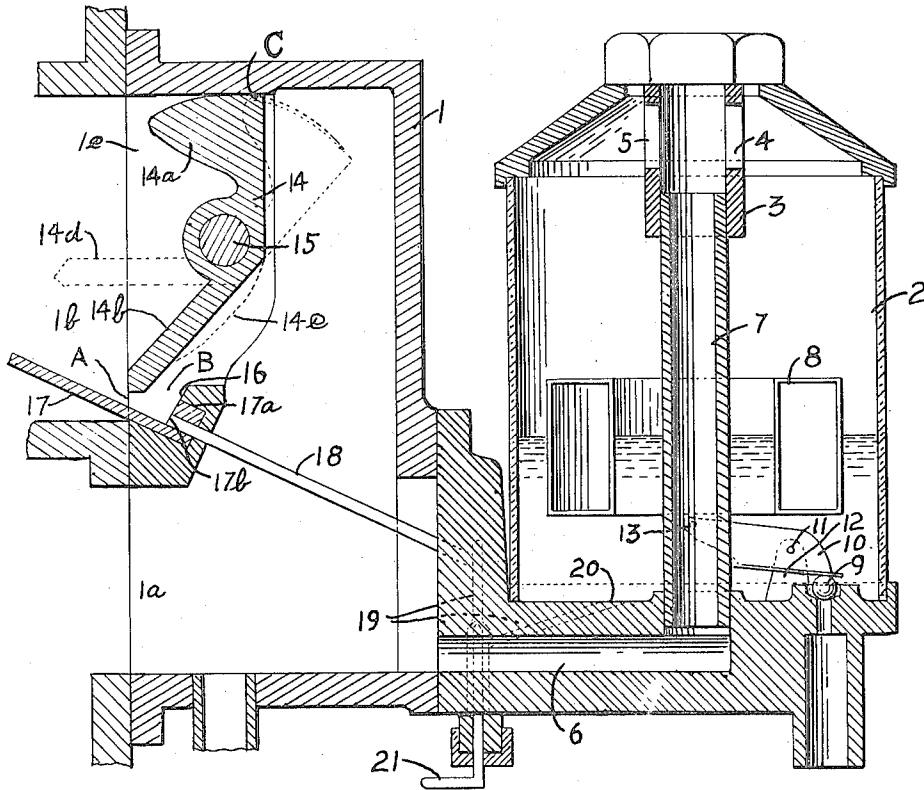


FIGURE 1

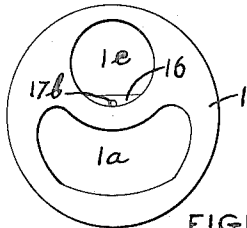


FIGURE 2

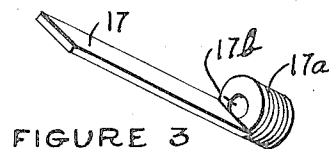


FIGURE 3

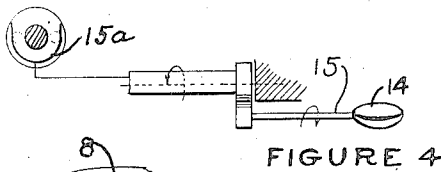


FIGURE 4

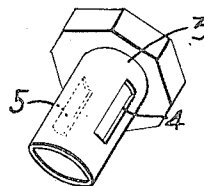


FIGURE 5

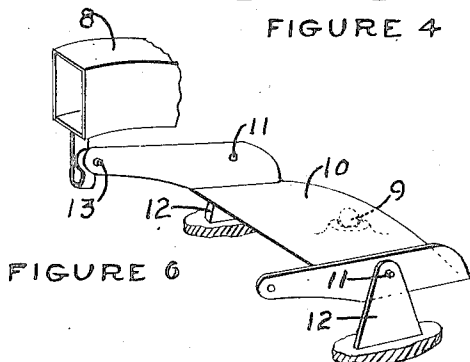


FIGURE 6

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CARBURETER.

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To all whom it may concern:

Be it known that I, JOHN A. OSTENBERG, a citizen of the United States, and resident of Campbell, in the county of Santa Clara and State of California, have invented a certain new and useful Improvement in Carbureters, of which the following is a specification.

My invention relates particularly to the valve in connection with the discharge nozzle of the spraying tube, and the objects of my invention are to produce a form of valve in such relation to the fuel intake and air intake, first, as to produce a uniform mixture of air and fuel in any desirable quantity according to the requirements of the engine, and second, so as to satisfactorily atomize the mixture as it passes into the intake port, thus combining in the one device the functions of a throttle and a carbureter.

A third object is to so place the nozzle that there will be no place for the fuel to recondense, which is frequently the case in those types of carbureters now in use, thus making it particularly adaptable for use with low grade fuels.

A fourth object is to so construct and position the parts mentioned that the carbureter may be secured directly to the engine without any intervening piping, and will be simple in construction and effective in operation.

In order to more fully comprehend the objects of the present invention as above set forth, the following facts in regard to carbureters in general as used in connection with internal combustion engines should be kept in mind. A carbureter of the class to which the present invention belongs is a device wherein a current of air, on its passage to the cylinder of the engine, is made to flow around, or by, the orifice of a fuel-supplying nozzle in such a way as to form a diminution of pressure around the orifice of the nozzle relative to the pressure on the surface of the liquid in the fuel supplying vessel, said diminution of pressure causing the liquid fuel to issue from the orifice and carburete the passing air. A carbureter must of course be able to supply a varying quantity of carbureted air to suit a fluctuating engine load, it therefore has embodied in it a regulating device called a throttle, or works in conjunction with such a device. Inasmuch as carbureted air

when compressed and ignited, develops its highest explosive pressure only within a somewhat narrow range of relative proportions of air and fuel, it is of course highly desirable that the relative proportions of air and fuel be maintained at the point of highest efficiency for any and all positions of the throttle valve. The means employed to attain this object is to so vary the diminution of pressure at the orifice of the fuel supplying nozzle, relative to the pressure on the surface of the liquid fuel in the supply vessel, that the difference in said pressure shall cause the liquid fuel to issue from the orifice of the nozzle in proper proportion to the flow of air as determined by any and all positions of the throttle valve. Various mechanical means have been employed to produce and control this variation in pressures or suction at the orifice of the nozzle, including moving parts and springs requiring more or less delicate adjustment, or subject to derangement.

One object of my invention is, therefore, to produce the above explained desirable result in the simplest manner possible, that is, to so form the throttle valve and so locate the said valve in relation to the fuel supplying nozzle that the throttle valve itself shall produce the necessary variation in pressure at the nozzle, above referred to, when actuated by hand or an engine governor, to vary the quantity of air passing through the carbureter.

For a full understanding of my invention and the merits thereof reference is to be had to the following description and accompanying drawings, in which,—

Figure 1 is a vertical section through a carbureter having my improvement embodied therein. Fig. 2 is a detail elevation showing the large air passages to the carbureter body, and showing the position of the discharge end of the spraying tube. Fig. 3 is a perspective view of the atomizing plate. Fig. 4 is a diagrammatic plan view of the valve connection to governor. Fig. 5 is a perspective view of the cap nut. Fig. 6 is a perspective view of float lever and valve.

Similar reference characters refer to similar parts throughout the several views.

Referring now more particularly to the drawings, 1 indicates the carbureter body which is supplied with air from the crank case through opening 1^a and discharges into

intake port 1^b of the engine as hereinafter described.

At 2 is the float chamber mounted on the rear of carbureter 1. Positioned in the upper portion of float chamber 2 is a cap nut 3 having slots 4 and 5 formed in the opposite sides thereof.

At 6 is shown a conduit leading from carbureter body 1 to float chamber 2 and having open communication with the latter through conduit 7 and cap nut 3 and slots 4 and 5.

A float regulating the supply of fuel in float chamber 2 is shown at 8 operating a ball valve 9 by means of a float lever 10 pivoted at 11 on bearings 12 and pivotally connected to float 8 at points 13.

In the upper portion of the front of carbureter body 1 and in air passage 1^c, is mounted butterfly valve 14 on shaft 15, the upper lobe of said valve 14 being thickened and formed as shown at 14^a, and the lower lobe placed at angle to said upper lobe as shown at 14^b. In the lower portion of air passage 1^c is formed a cavity 16 tapped to receive atomizing plate 17, and tapped from the rear to receive one end of spraying tube 18, the other end of tube 18 being connected to a conduit 19 formed in the rear wall of carbureter body 1 and in the bottom of float chamber 2, said conduit 19 opening into said float chamber 2 at 20.

At 21 is indicated a needle valve for controlling the flow of fuel from float chamber 2.

Atomizing plate 17 is enlarged and threaded at 17^a and screwed into position as shown in Fig. 1 and is bored as shown at 17^b to form a nozzle for spraying tube 18 as shown.

When my improved carbureter is in operation the action is as follows: Carbureter body 1 is of course supplied with air through opening 1^a, and through conduits 6 and 7 and cap nut 3 the float chamber 2 is supplied with air from carbureter body 1. Float chamber 2 is supplied with liquid fuel through ball valve 9 when float 8 falls and operates float lever 10 hereinbefore described, said float 8 falling when fuel is drawn off through conduits 19 and 18.

It may now be seen that the objects hereinbefore set forth are obtained by means of the construction and relative proportions of certain parts described. The valve 14 is shown in full lines in a closed position and having such relation to cavity 16 and plate 17 as to form passages B and A respectively, and forming a small opening just large enough to allow sufficient air to pass there-through to keep the engine running idle. The relative position of valve 14 and cavity 16 is such that the air in passing through passage B will meet with sufficient resistance to form the required diminution of pressure

around the orifice of nozzle 17^b and cause sufficient fuel to flow and properly carburete the air. The air and fuel being thrown with great force against plate 17, the fuel is thoroughly atomized and mixed with said air. As passages A and B are enlarged by the opening of valve 14 operated by governor 15^a or otherwise, the pressure of air on the orifice of nozzle 17^b is correspondingly relieved, relative to the pressure on the surface of the fuel in float chamber 2, so that the difference in said pressures causes the fuel to issue from said orifice in proper proportion to the increased flow of air through passages A and B.

The distance from passage A to the orifice of nozzle 17^b is so short that practically none of the mixture has an opportunity to recondense. This fact is of value in keeping the mixture uniform because when condensation takes place it occurs principally when the valve is but partially opened and thus unintentionally reduces the strength of the mixture, said condensation being drawn out when the valve is opened wide and thus unintentionally increasing the richness of the mixture.

It is understood that while the particular form of carbureter here shown and described is adapted for use on a two cycle engine and the valve is operated by an engine governor, changes in form, proportions, and minor details of construction and operation may be resorted to within the scope of the appended claims, as for instance the upper portion of lobe 14^a of valve 14 may be reduced so as to form passage C when said valve 14 is opened, and lower lobe 14^b may be thickened as indicated at 14^c to reduce passage B sufficiently to offset the passage formed at C. In dotted lines at 14^d the valve is shown wide open.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,—

1. The combination of a carbureter body, a throttle valve operatively positioned therein, an atomizing plate and a spraying tube, said valve being so positioned with relation to said atomizing plate as to form a passage therebetween, and so positioned with relation to the discharge end of said spraying tube as to form a relatively larger passage therebetween.

2. The combination of a carbureter body, a throttle valve operatively positioned therein, a spraying tube and an atomizing plate, said valve having an upper lobe and a lower lobe angularly positioned with relation to each other and so positioned with relation to said atomizing plate and the discharge end of said spraying tube as to cause a varying air pressure upon the discharge end of said spraying tube during the complete cycle of its operation.

3. The combination of a carbureter body, a throttle valve operatively positioned therein, an atomizing plate and a spraying tube, said valve having an upper lobe and a lower lobe angularly positioned with relation to each other, said lower lobe being so positioned with relation to said atomizing plate as to form a passage therebetween, and so positioned with relation to the discharge end of said spraying tube as to form a relatively larger passage therebetween.

4. The combination of a carbureter body, a throttle valve operatively positioned therein, an atomizing plate and a spraying tube, said valve having an upper lobe and a lower lobe angularly positioned with relation to each other, said lower lobe being so positioned with relation to said atomizing plate as to form a passage therebetween, and so positioned with relation to the discharge end of said spraying tube as to form a relatively larger passage therebetween, thereby maintaining a uniform combustible mixture throughout the entire range of movement of said valve.

5. The combination of a carbureter body, a throttle valve operatively positioned therein, an atomizing plate and a spraying tube, said valve having an upper lobe and a lower lobe angularly positioned with relation to each other, said lower lobe being so positioned with relation to said atomizing plate as to form a passage therebetween, and so positioned with relation to the discharge end of said spraying tube as to form a relatively larger passage therebetween, and said

upper lobe increasing in thickness toward its outer edge substantially as shown and described.

6. The combination of a carbureter body provided with an air passage and a float chamber, a conduit passing from said float chamber to said passage, and a valve operatively positioned in said air passage, said valve having an upper lobe and a lower lobe angularly positioned with relation to each other, said lower lobe being so positioned as to cause a varying air pressure upon the discharge end of said conduit and said upper lobe increasing in thickness toward its outer edge to such a degree as to act as a closure for the upper part of said air passage during the complete cycle of its operation.

7. The combination of a carbureter body, a throttle valve operatively positioned therein, a spraying tube, and an atomizing means positioned adjacent to the discharge end of said spraying tube, said valve being so positioned with relation to said atomizing means as to form a passage therebetween, and so positioned with relation to the discharge end of said spraying tube as to form a relatively larger passage therebetween.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

JOHN A. OSTENBERG.

Witnesses:

W. W. HUTCHISON,
Mrs. J. E. BROWN.