H. A. MILLER.

CARBURETER.

APPLICATION FILED OCT. 19, 1910.

1,036,301.

Patented Aug. 20, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

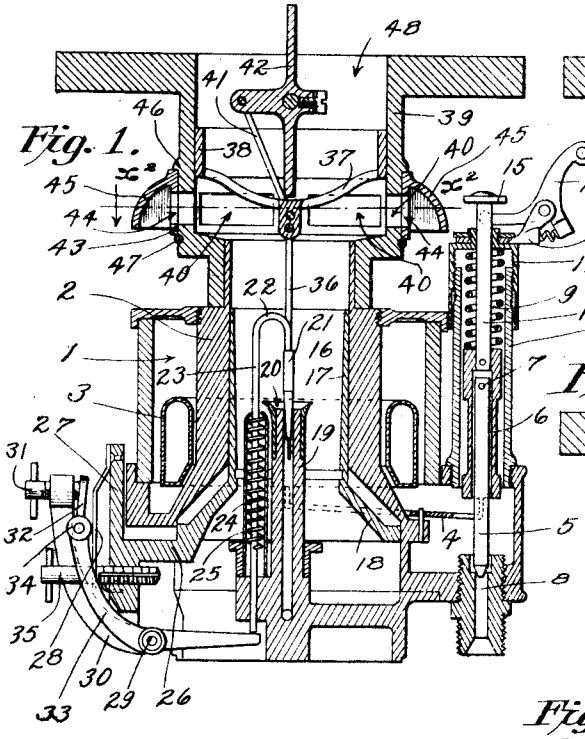


Fig. 6.

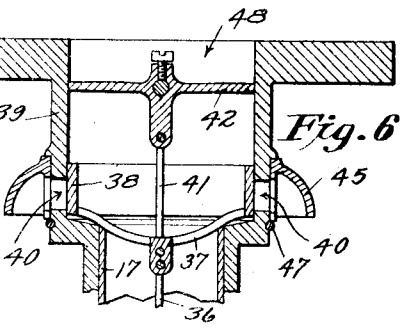


Fig. 7.

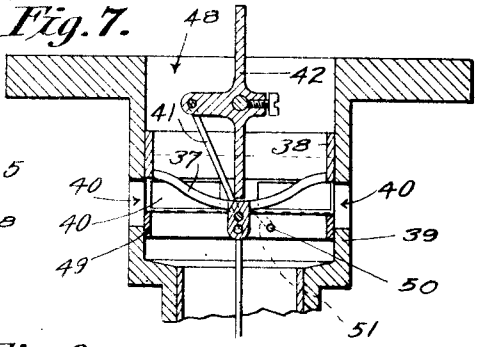


Fig. 2

Fig. 3.

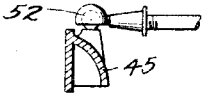
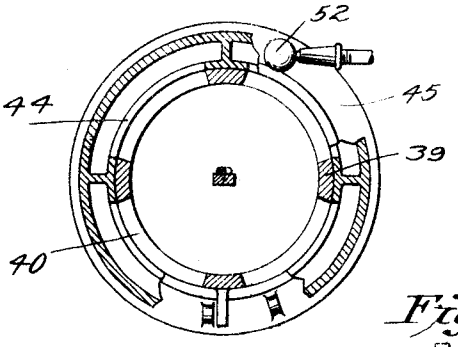


Fig. 4.



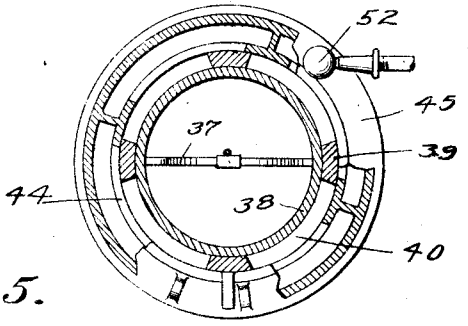
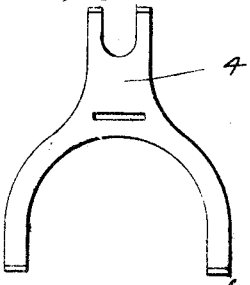


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 8.

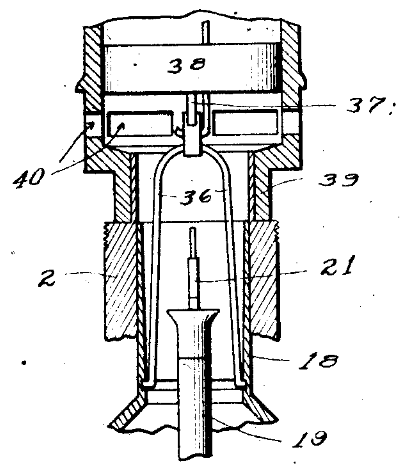
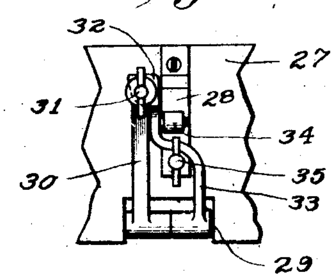


Fig. 9.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,036,301. Specification of Letters Patent. Patented Aug. 20, 1912.

Application filed October 19, 1910. Serial No. 587,985.

To all whom it may concern:

Be it known that I, HARRY A. MILLER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Carbureter, of which the following is a specification.

This invention relates to carbureters, and one of the main objects of the invention is to provide a central upwardly moving column of normal air saturated with gasolene and to introduce the auxiliary air in a radial direction from all sides toward the center to mix with the upwardly moving mixture of normal air and gasolene.

A further object is to provide for regulating the admission of auxiliary air, whereby the suction on the gasolene nozzle may be increased or diminished, as desired, to produce the required richness of mixture. Thus with heavy air at a low altitude, or air containing considerable moisture, it has been found that the normal quantity of air of this quality will pick up more gasolene than with normal air of a lighter or drier quality, making the mixture unduly rich for the power required, and to obviate this more auxiliary air may be admitted which will reduce suction on the gasolene nozzle and thereby reduce the richness of the mixture. Or when the automobile is being operated through the medium of gears, which increases the motor speed with respect to the normal ratio of gearing at which it operates, this increased engine speed will produce an extra amount of suction on the nozzle, thereby drawing an undue amount of gasolene for the power required, in which event the carbureter may be adjusted to increase the amount of auxiliary air, thereby reducing the suction at the nozzle and diminishing the amount of gasolene drawn into the mixture. By reason of the auxiliary air being introduced at all points circumferentially of the central column of normal air and gasolene, the mixture of auxiliary air with normal air and gasolene is much more uniform.

A further object is to so construct the carbureter that the parts for regulating the auxiliary air may be applied to carbureters originally designed for a smaller intake opening, and when applied to such carbureters thereby increase the capacity of such carbureters and enable them to be employed in connection with larger induction pipes and larger engines without reconstructing the body portion of the carbureters.

Another object is to deflect the entrance of the auxiliary air at a point exteriorly of the opening through which it enters, so that it will enter with less resistance and thereby a greater volume of auxiliary air may be drawn in than otherwise through a given sized opening.

Referring to the drawings:—Figure 1 is a vertical sectional view through a carbureter. Fig. 2 is a section on line x^2—x^2 Fig. 1. Fig. 3 is a detail view showing the joint between the auxiliary air valve and its operating connection. Fig. 4 is a view similar to Fig. 2, showing the auxiliary air valve in another position. Fig. 5 is a plan view of the float lever. Fig. 6 is a view of the upper portion of the carbureter, showing the automatic air valve closed, and throttle valve closed. Fig. 7 is a view similar to Fig. 6, showing the throttle valve and auxiliary air valve open, and showing a modified form of auxiliary air valve. Fig. 8 is a vertical, sectional view on line x^8—x^8 Fig. 1. Fig. 9 is a side elevation of what is shown in Fig. 1.

The carbureter comprises an annular float chamber 1 which surrounds the main cylindrical body portion 2, and within the float chamber 1 is the float 3 which controls a forked lever 4, the latter regulating the position of an inlet valve 5 which regulates the admission of gasolene into the float chamber and maintains a substantially constant level therein.

The needle valve 5 is loosely supported within a sleeve 6, the upper end of the needle valve 5 being pivoted at 7 to the sleeve which permits the needle valve 5 to adjust itself to a natural seat on the inlet valve 8. A spring 9 above the sleeve 6 serves to normally depress the sleeve 6 and needle valve 5. A rod 10 is secured to the sleeve 6 and projects up through the spring casing 11 and a cap 12 which is screwed to the upper end of the spring casing 11. Carried on the cap 12 is a bracket 13 in which is pivoted a lever 14, the end of which is adapted to engage with a head 15 on the end of the rod 10 to lift the latter when it is desired to flood the carbureter.

The lower portion of the main cylindrical body 2 is flared outwardly, as shown, and

formed within the body 2 is a carbureting chamber 16. Sliding in the cylindrical body 2 within the carbureting chamber 16 is a sleeve 17, the lower end of which is provided with an outwardly flared frusto-conical flange 18, which flange acts as an air deflector to throw the normal air which enters from the bottom toward the nozzle 19. On the upper end of the nozzle 19 is a cup 20, the upper rim of which is flared outwardly, as shown, so that the air which passes up through the space between the sleeve 17 and nozzle 19 will be deflected outwardly at the mouth of the nozzle 19 and thereby form a condition of suction immediately at the mouth of the nozzle 19, the amount of suction thus produced being greater than if the walls of the nozzle 19 were continued straight up at its top.

Projecting into the nozzle 19 is a needle valve 21 having a goose-neck 22 carried by a rod 23 which extends down through a spring casing 24 within which is a coil spring 25, the upper end of the coil spring being confined by the spring casing 24 and the lower end of the coil spring being secured to rod 23. The nozzle 19 is located in the center of the carbureting chamber and the spring casing 24 is located at one side of the nozzle and close thereto.

Projecting from the deflector 18 is a bracket 26 having an extension 27 to which is secured a roller track 28. Pivoted at 29 to the bracket 26 is a lever 30, one end of which lies under the end of the rod 23, and screwed in the other end is a thumb screw 31 which bears against an extension 32 of a roller supporting lever 33 which is loosely pivoted at 29 and carries a roller 34 which is adapted to ride along the flat spring 28 when the sleeve 17 is moved longitudinally. A thumb screw 35 extends through the flat spring 28 into the bracket 26 and provides means for adjusting the position of the flat spring 28. It is obvious that if the thumb screw 31 be moved in, the upper end of the lever 30 will be moved outwardly as the roller 34 bears against the spring 28, the latter resisting inward movement of the roller 34, and as the lever 30 is thus adjusted the lower end thereof will act to lift rod 23, thereby moving the needle valve 21 in position to allow more gasolene to flow through the nozzle. This adjustment of the needle valve 21 is independent of the longitudinal position of the sleeve 17 and deflector 18, and the latter may be moved and adjusted up or down as desired without interfering with the adjustment of the needle valve 21, as during such movement the flat spring 28 rides along the roller 34 but always maintains the roller 34 and levers 33 and 30 in position.

The sleeve 17 is connected to a rod 36 which extends up through the carbureting chamber 16 and is pivotally connected to a yoke 37 which is attached to an inner auxiliary air valve 38 which is slidably arranged in an extension sleeve 39, the latter having auxiliary air ports 40 which are segmental and arranged circumferentially in the wall of the extension 39, and ports 40 may be opened or closed by moving the inner auxiliary air valve 38 up or down, the latter being operated by a link 41 which is connected to the yoke 37 and to a throttle valve 42. When the throttle valve 42 is closed, as shown in Fig. 6, the inner auxiliary air valve 38 closes the auxiliary air ports 40, while when the throttle valve 42 is opened, as shown in Fig. 1, the inner auxiliary air valve 38 opens the ports 40 and obviously intermediate positions of the throttle will produce correspondingly intermediate positions of the inner auxiliary air valve 38.

Externally of the extension 39 is an outer auxiliary air valve 43 having ports 44 and formed with a bell-shaped flange 45 which serves to deflect or guide the air upwardly and inwardly through the ports 44 and 40 to cause the entering air to promote the entrance of air at this point and also serves as a hand-hold to enable the outer auxiliary air valve to be easily turned to adjust the width of the ports 40. The upper edge of the outer auxiliary air valve 43 takes against the flange 46 on the extension 39, and the lower edge is supported by a circular spring wire 47 which is retained in a groove in the extension 39. The lower part of the extension 39 is contracted, as shown, to fit the upper end of the main body 2, and when thus applied the opening 48 through which the mixture is discharged into the induction pipe is larger than the opening from the carbureting chamber 16.

If it is desired to operate the motor with a rich mixture, the outer auxiliary air valve 45 may be closed as much as necessary which will restrict the entrance of the auxiliary air and will thereby increase the amount of suction at the nozzle, thus making the mixture rich, while by opening the outer auxiliary air valve a greater amount of auxiliary air will be admitted and the suction at the nozzle will be reduced and the mixture will be less rich.

In Fig. 7, 49 is an independent, inner, auxiliary air valve which lies below the valve 38 and comprises merely a circular band with a pin 50 extending through a diagonal slot 51 formed in the wall 39, whereby, upon turning pin 50, the valve 49 will be raised or lowered according to the direction in which it is turned and will thereby alter the size of the ports 40, the valve 49 corresponding to the valve 45, but acting to restrict the ports 40 in height instead of in breadth as accomplished by valve 45.

52 is a ball and socket connection on the valve 45 enabling the latter to be operated from a distant point if desired.

What I claim is:—

1. A carbureter comprising a mixing chamber the lower end of which constitutes a carbureting chamber, a fuel nozzle, a primary air inlet discharge into the carbureting chamber, the side walls of the mixing chamber having an annular port therein above the nozzle, a sliding sleeve within the mixing chamber and adapted to cover said ports, a throttle valve and a connection from the throttle valve to said sliding sleeve for causing the sleeve to be adjusted into a position corresponding to the position in which the throttle valve is adjusted, a sleeve below the first sleeve and having an outwardly flaring lower end for deflecting air toward the nozzle and a connection between the first sleeve and second sleeve for sliding the first sleeve in unison with the second sleeve.

2. A carbureter comprising a mixing chamber the lower end of which constitutes a carbureting chamber, a fuel nozzle, a primary air inlet discharge into the carbureting chamber, the side walls of the mixing chamber having an annular port therein above the nozzle, a sliding sleeve within the mixing chamber and adapted to cover said ports, a throttle valve and a connection from the throttle valve to said sliding sleeve for causing the sleeve to be adjusted into a position corresponding to the position in which the throttle valve is adjusted, a sleeve below the first sleeve and having an outwardly flaring lower end for deflecting air toward the nozzle, and a connection between the first sleeve and second sleeve for sliding the first sleeve in unison with the second sleeve, a needle valve for controlling said nozzle, and means operated by said second sleeve for operating said needle valve.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 14th day of October, 1910.

HARRY A. MILLER.

In presence of—
G. T. HACKLEY,
FRANK L. A. GRAHAM.