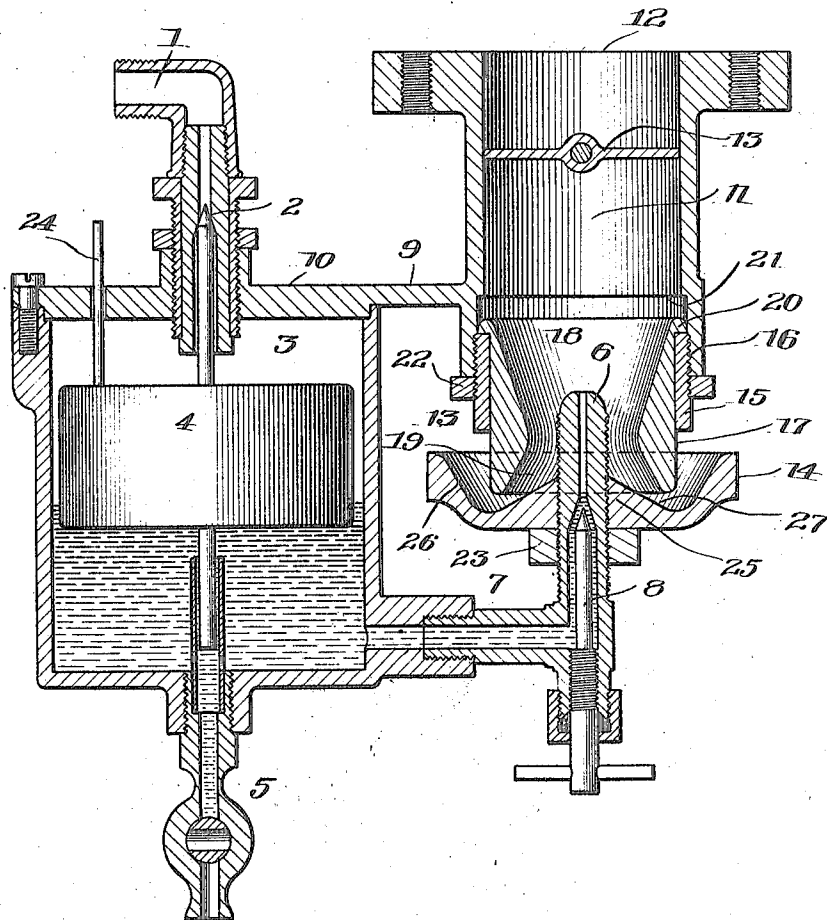


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CARBURETER.

APPLICATION FILED JUNE 4, 1914.

1,208,196.

Patented Dec. 12, 1916.



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CARBURETER.

1,208,196.

Specification of Letters Patent.

Patented Dec. 12, 1916.

Application filed June 4, 1914. Serial No. 843,073.

To all whom it may concern:

Be it known that I, WINFIELD P. PEMBROKE, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Carbureters; and I do hereby declares the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to internal combustion engines and more particularly to charge forming devices therefor and it has for its object to provide a simple and efficient carbureter in which air and gas will be properly mixed and promptly supplied in just the right quantity according to the demands of the engine, whether at high or low speeds, the regulation of the quantity being automatically effected to a nicety at all times and independently of the use of the ordinary puppet valve. Provision is also made for adequately priming the engine in an effective manner and to these and other ends, the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawing the figure is a sectional view of a carbureter constructed in accordance with and illustrating one embodiment of my invention.

While it will be understood that my improvements are alike applicable to compound carbureters or those of the type in which air or gas or both air and gas are admitted or mixed at a plurality of points, or even applicable as to some function to air admission openings alone, I have shown the improvements in the present instance, as embodied in a simple carbureter having single air and gas admissions to a single mixing chamber. In this view and referring more particularly to the drawing, 1 indicates, in the present instance, a gasoline fuel supply pipe leading through a needle valve 2 to a float chamber 3 containing a float 4 connected up as usual or in any preferred manner to control the said valve, a pet cock 5 being provided to drain the chamber when required. The function of these parts is the usual one, namely, to maintain a proper normal level in a fuel jet 6 to which the gasoline flows through a connec-

tion 7. The jet may be fitted with the usual needle valve control 8 and is so shown.

Supported on an extension 9 of the cover 10 for the float chamber 3 is the carbureting chamber 11 which chamber, in the present instance, is tubular in form. Its eduction opening may be considered its upper end 12 where it leads, beyond the butterfly or throttle-control 13 to the vacuum chamber (not shown) maintained in communication with the engine cylinders. The lower end of the chamber is also open at 13 which constitutes the induction opening. Arranged in spaced relation to the said last mentioned opening so as to regulate its capacity is an air deflecting member 14 which member is preferably annular and cup-shaped, being threaded upon the fuel jet 6 and supported thereby.

A sleeve 15 is threaded at 16 into the induction end 13 of the chamber 11 and guided in this sleeve is a tube 17 into which the fuel jet 6 projects and which is preferably provided with a long internal flare 18 at the top and a shorter flare 19 at the bottom in the manner of a Venturi tube. Its lower end projects toward but is normally held spaced from the bottom of the air deflecting cup 14 by reason of a flange 20 at its upper end that rests upon the sleeve 15. The tube 18 is preferably made very light as of aluminum, so that it will vibrate up and down (within the limitations of the sleeve 15 and an upper shoulder 21 between which the flange 20 thereof is confined) as a result of variations in the pressure within the carbureting chamber 11 and the rushing in of a correspondingly greater or less volume of air at the lower end 19 between it and the member 14.

The tube is shown in its normal position and that which it will ordinarily maintain while the engine is at low speed and demanding a minimum of air. When the pressure in the mixing chamber decreases with a correspondingly increased pressure of the atmospheric air to enter the induction opening due to the further demands of the engine, the tube 17 will be sucked up within the chamber, increasing the separation from the cup 14 and allowing the rapid influx of a greater volume of air. When the demand subsides, as when the engine goes back to a low speed, the tube drops again of its own weight and restricts the induction opening correspondingly.

By adjusting the sleeve 15 up and down, the latitude of movement of the tube 17 can be regulated and particularly its normal or low speed position. By adjusting the cup 14 up or down on the jet 6, these regulations may be furthered and the extent of maximum opening enlarged or increased. It will therefore be seen that between the two adjustments, provision may be made for any desired capacity at any point in the operation. For instance, with the parts in the positions shown, by lowering the cup 14, only, the minimum opening is enlarged but the latitude of movement of the tube 17 remains the same, while by lowering both the cup and sleeve 15 to the same degree, the minimum opening remains the same but the maximum opening is increased as the latitude of movement of the tube 17 is increased, and so on. Lock nuts 22 and 23 may be provided for the sleeve 15 and the cup 14, respectively.

I also make provision for flooding the carbureter when it is desired to prime the engine. For this purpose, an operating rod 24 is carried by the float 4 and projects through the cover 10 to the exterior where it is accessible to the operator's fingers. Upon depressing this rod, the float 4 is submerged, displacing enough of the normal body of gasoline in the chamber 3 to overflow the fuel jet 6 and fill the cup 14 to a point above the end of the tube 17, thus sealing the latter. When the suction from the cylinders causes a rarefaction and drop in pressure in the chamber 11, this overflowed quantity of fuel is projected in a body up into the chamber by atmospheric pressure and in front of the inrushing air. The peculiar shape which I give to the bottom of the cup or air deflecting member 14 aids in properly directing this priming charge and also creates proper currents in the air that is drawn in for ordinary mixing purposes. To these ends, the cup has a raised central portion 25. The interior walls slope down abruptly at 26 from the rim of the cup and thence rise at 27 at a less abrupt angle toward the center. The abrupt slope at 26 and the relatively elevated rim also prevent the carbureter from emitting whistling noises which it would otherwise be apt to do because of the air impinging upon the lip of the tube 17 which has somewhat the form of the lip of a steam whistle. The flare at the same time gives sufficient room for the flow of air in the required quantities.

I claim as my invention:

1. In a carbureter, the combination with a carbureting chamber and an air deflecting member arranged in spaced relation to the induction end thereof and adjustable toward and from the latter, of a vibratory tube projecting from said end of the chamber toward the air deflecting member and adapted to

be actuated by pressure variations in the carbureting chamber and means for regulating the amplitude of movement of the tube.

2. In a carbureter, the combination with a carbureting chamber and a cup-shaped air deflecting member arranged in spaced relation to the induction end thereof, of a vibratory tube projecting from said end of the chamber into the cup-shaped air deflecting member and adapted to be actuated by pressure variations in the carbureting chamber, said tube constituting the sole air intake passage to the carbureting chamber.

3. In a carbureter, the combination with a carbureting chamber and an annular air deflecting member arranged in spaced relation to the induction end thereof, of a vibratory tube projecting from said end of the chamber toward the air deflecting member and adapted to be actuated by pressure variations in the carbureting chamber, and a fuel jet projecting into the tube, the air deflecting member being arranged to surround the fuel jet below and independently of the discharge opening therein and being adjustable thereon toward and from the tube.

4. In a carbureter, the combination with a carbureting chamber and an air deflecting member arranged in spaced relation to the induction end thereof, of a vibratory tube projecting from said end of the chamber toward the air deflecting member and adapted to be actuated by pressure variations in the carbureting chamber and means for regulating the latitude of movement of the tube, said tube constituting the sole air intake passage to the carbureting chamber.

5. In a carbureter, the combination with a carbureting chamber and an air deflecting member arranged in spaced relation to the induction end thereof, of a vibratory tube projecting from said end of the chamber toward the air deflecting member and adapted to be actuated by pressure variations in the carbureting chamber, means for regulating the latitude of movement of the tube and means for adjusting the fixed position of the air deflecting member toward or away from the tube.

6. In a carbureter, the combination with a carbureting chamber and an air deflecting member arranged in spaced relation to the induction end thereof, of a sleeve threaded for adjustment in said end of the chamber, and a vibratory tube guided in the sleeve to project toward the air deflecting member and adapted to be actuated by pressure variations in the carbureting chamber, said sleeve being arranged to limit the vibratory movement of the tube in one direction, and to constitute the sole air intake passage to the carbureting chamber.

7. In a carbureter, the combination with

a carbureting chamber, of a cup-shaped air
deflecting member arranged in spaced rela-
tion to the induction end of the chamber,
said member having a raised central portion
5 at its bottom concentric with the tube and
the interior walls or surfaces of the mem-
ber being sloped abruptly downward from

the rim and thence less abruptly upward to-
ward the center.

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Witnesses:

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