R. HODGKINS & S. CLIFTON.

CARBURETER.

APPLICATION FILED FEB. 2, 1918.

1,290,195. Patented Jan. 7, 1919.

Fig. 1.

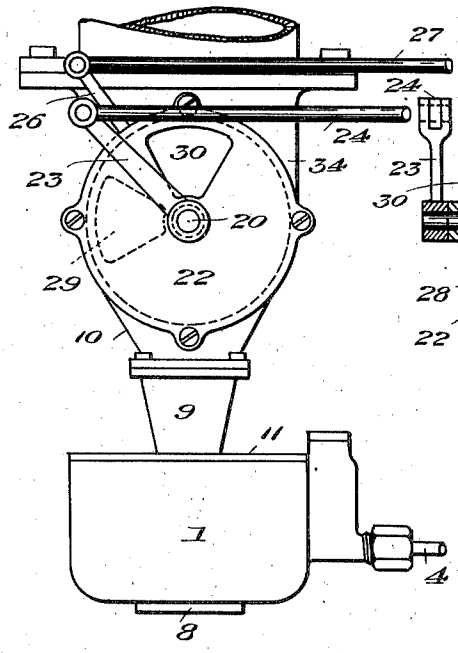


Fig. 2.

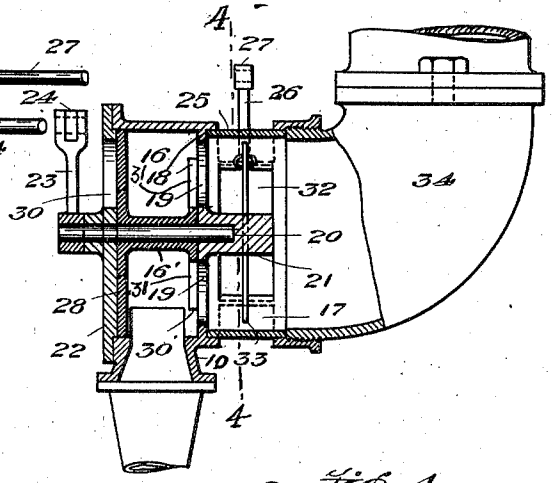


Fig. 4.

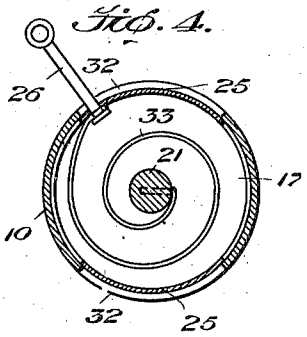


Fig. 3.

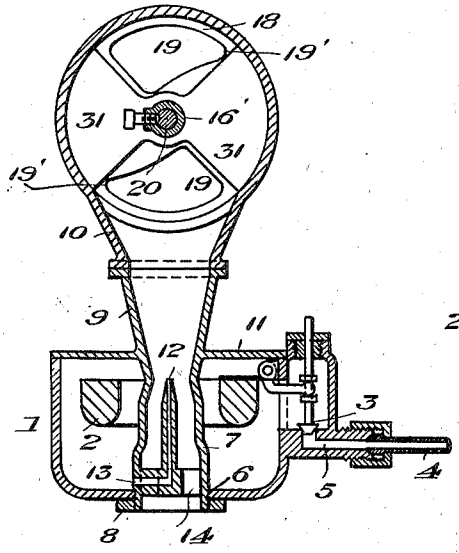
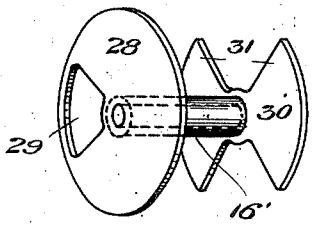


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,290,195. Specification of Letters Patent. Patented Jan. 7, 1919.

Application filed February 2, 1918. Serial No. 215,081.

To all whom it may concern:

Be it known that we, REGINALD HODGKINS and SYDNEY CLIFTON, citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to improvements in carbureters for internal combustion engines, and has special reference to novel improvements in carbureters adapted to be utilized in connection with the engines of automobiles, motor cycles, aeroplanes, and the like, as will be apparent to those skilled in the art to which the invention relates.

The prime object of our invention is to provide a simple, economical, durable, efficient and thoroughly reliable carbureter, that will demonstrate great economy in the use of liquid fuel and shall at all times deliver to the engine a proper explosive mixture irrespective of the speed of the engine.

Another object of the invention is to so construct the carbureter that the mixing chamber and auxiliary mixing chamber will be adjacent, and the composition mixture therein shall be constant at all speeds of the engine.

A further object of the invention is to provide a novel carbureter so constructed that when the engine is caused to run at high speed the ratio of the air to the fuel will be increased proportionately.

A further object of this invention is to insure a thorough spraying action of the liquid fuel, and thereby to attain a thorough admixture of the air and fuel within the mixing chamber after it leaves the float chamber.

A further object of the invention is to provide a carbureter which shall be capable of all necessary adjustment, and which may be readily taken apart and then reassembled without change in the relations of the adjustable parts.

The foregoing and such other objects as may appear from the ensuing description are attained by the construction, arrangement, location and combination of the parts hereinafter more fully described, illustrated in the accompanying drawings and particularly pointed out in the claims appended hereto, it being understood that slight changes in the form, proportion and minor details of the construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

The invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which:—

Figure 1, is an end elevation of the improved carbureter embodying our invention.

Fig. 2, is a cross-sectional view taken through the carbureting chambers, showing the connection with the float chamber in full lines broken away and the connection leading to the manifold partly in section and partly in full lines.

Fig. 3, is a cross-section taken through the carbureter and float chamber.

Fig. 4, is a cross-section taken on the line 4—4 Fig. 2, and

Fig. 5, is a perspective view of the mixture controlling valve removed from the carbureter casing.

Similar numerals of reference are employed to designate corresponding parts throughout the several views in the drawings.

In carrying out our invention as illustrated and which shows a preferred construction, the numeral 1 indicates a standard float chamber constituting the liquid fuel or gasolene reservoir, provided with a float 2 connected with a valve 3, which is adapted to regulate the supply of gasolene to the said chamber through the gasolene supply pipe 4, and the duct 5. The bottom of said chamber 1 is internally screw-threaded at its central portion 6, to engage with the lowermost screw-threaded end portion of an upright tubular member 7, which is connected to the chamber by a securing nut 8, said member passing upwardly through the chamber and terminating with an outwardly flaring integral upper portion forming a cone-shaped connection 9, which is suitably and rigidly secured to the lower portion of the carbureter casing 10 and intermediate said member 7 is formed an integral lateral extension 11, constituting a cover for the said chamber. Secured centrally within the member 7 near its lower end is the gasolene or fuel spraying nozzle or needle 12 communicating with the supply duct 13, with air openings 14 surrounding said spraying nozzle or needle.

Formed within the carbureter casing 10,

is the mixing chamber 16, in which is rotatably mounted a regulating valve 16′, said mixing chamber being separated from an auxiliary mixing chamber 17, by an interposed diaphragm 18, in which are formed a plurality of ports 19, the leading edge 19′ of said ports commencing with a small area and gradually increasing in order to admit a proportionately greater flow of mixture into the auxiliary mixing chamber as the valve 16′ is rotated, said valve being rotated by means of a spindle 20, having one end journaled in the centrally arranged boss 21, formed integral with the diaphragm 18, and the other end running through the casing cover or cap plate 22, and a suitable lever 23 is secured to the outer end of the spindle 20, to which lever is connected a rod 24, or other suitable means for properly operating the said valve. The secondary valve 25, rotatably mounted within the auxiliary chamber is suitably operated by an arm 26 connected at one end to the valve 25, and at the other end to a rod 27, or other desirable operating means. The valve 16′ is formed at its front end portion with an annular flange 28 with a port 29 adapted to register with the port 30 formed through the cover or cap plate 22, and the rear end portion of said valve 16′ is provided with a flange 30′ in the form of a double quadrant 31, this arrangement being provided so that as the gasolene and air mixture is drawn up through the conical connection 9 into the mixing chamber, it gets a further supply of air through the port 30 when the valve has been partly rotated, thus allowing a richer mixture to start on and a more generous supply of air as the valve opens.

It will be perceived that the quadrants 31 are so disposed that they can completely close the ports 19, and as the valve 16′ is rotated it begins by making a small port opening at the leading edge 19′ of the ports 19, gradually admitting an increased supply of the gaseous mixture as it comes from the float chamber portion; further, as the port 29 in said valve begins to register with the port 30 in the cover plate 22, a supply of fresh air strikes the first gaseous mixture and serves to further carburet it, with the advantage that all the air is not sucking direct upon the spray nozzle and also contributes to a more intimate and better mixing of the fuel.

It will be seen that the mixture on passing through the ports 19 on its way to the intake manifold is compelled to pass through an auxiliary chamber 17, where it receives a further supply of fresh air through the ports 32 formed in the casing 10 when the secondary valve 25 is rotated. This secondary valve is normally held in closed position by a coil spring 33, as shown in Fig. 4, one end of said spring being fixedly secured to the boss 21 and the other end secured to the arm 26 connected to the rod 27 by which the valve is opened, and is closed by the said spring, thereby insuring the thorough mixture of the gaseous vapor in the auxiliary chamber as the air strikes it simultaneously in different directions.

A suitable connection such as 34 connects the casing 10 with the inlet manifold of the motor or engine, and said connection may be of any suitable or desirable shape to serve any individual case.

It will be understood that the fuel may be entirely cut off by closing the valve 16′ and by opening the secondary valve 25, so that the engine can draw pure air while the car is running down hill and thereby serve to thoroughly scavenge the engine cylinders.

It will be obvious that the form and disposition of the ports 19 and the valve 16′ furnish complete control over the gaseous mixture, since a very small quantity of fuel and a large percentage of air can be obtained by partially opening the valve 16′, or a rich mixture can be obtained by reversing the process.

The operation of our improved carbureter will be readily obvious from the construction hereinbefore described, and as illustrated in the accompanying drawings.

Having thus described our invention what we claim and desire to secure by Letters Patent is:

1. A carbureter, comprising a casing having a depending portion, a mixing chamber, an auxiliary mixing chamber adjacent to the first named chamber, a diaphragm between said chambers provided with a plurality of ports therethrough, and a rotatably mounted valve within each of the said chambers.

2. A carbureter, comprising a casing, a mixing chamber formed within the casing, an auxiliary mixing chamber formed within the casing adjacent the first named chamber, a diaphragm integral with the casing for separating the said chambers provided with a plurality of ports therethrough, and a valve rotatably mounted within each of the said chambers.

3. A carbureter, comprising a casing, a mixing chamber formed within the casing, an auxiliary chamber formed within said casing adjacent to the first named chamber, a diaphragm for separating the said chambers provided with a plurality of ports therethrough, a valve rotatably mounted within the mixing chamber with a double quadrant forming a part thereof, and a valve rotatably mounted within the auxiliary chamber with a plurality of ports therethrough.

4. A carbureter, comprising a casing, a mixing chamber formed within the casing, an auxiliary mixing chamber formed within the casing adjacent said mixing chamber, a

diaphragm for separating the chambers formed with a plurality of ports therethrough, a valve rotatably mounted in the mixing chamber having a double quadrant formed at one end and an annular flange at its other end provided with a port, and a valve rotatably mounted in the auxiliary chamber provided with a plurality of ports.

5. A carbureter, comprising a casing, a cover plate secured to one end of the casing having an air port formed therethrough, a mixing chamber formed within the casing, an auxiliary chamber within the casing adjacent to said mixing chamber, an integral diaphragm adapted to separate the said chambers having a plurality of ports therethrough, a valve rotatably mounted within the mixing chamber provided with means adapted to register with said diaphragm ports and with means to register with the port in the cover plate, and a valve rotatably mounted within the auxiliary chamber having a plurality of ports therethrough.

6. A carbureter, comprising a casing with a cover plate secured at one end and a pipe connection at the other end thereof, a mixing chamber formed within the casing, an auxiliary mixing chamber adjacent said mixing chamber, a diaphragm for separating said chambers, a valve rotatably mounted within the mixing chamber, and a valve rotatably mounted within the auxiliary chamber.

7. A carbureter, comprising a casing having a cover plate secured at one end thereof, and a pipe connection at the other end, a mixing chamber formed within the casing, an auxiliary mixing chamber formed within the casing adjacent to the mixing chamber, a diaphragm integral with the casing for separating the said chambers provided with ports therethrough, a valve rotatably mounted within the mixing chamber having means for registering with said ports, and a valve rotatably mounted within the auxiliary chamber provided with a plurality of air ports.

8. A carbureter, comprising a casing, a cover plate secured to the casing having an air port therethrough, a mixing chamber and an adjacent auxiliary mixing chamber within the casing, a diaphragm between said chambers provided with a plurality of ports and an integral boss, a rod carried by said boss and cover plate with a valve rotatably mounted thereon, means adapted to register with the said diaphragm ports and the cover plate ports, and an automatic valve rotatably mounted within the auxiliary chamber.

9. A carbureter, comprising a casing with a mixing chamber and an auxiliary mixing chamber formed therein, a diaphragm between said chambers provided with a plurality of ports and a central boss, a valve rotatably mounted within the mixing chamber, a valve rotatably mounted within the auxiliary chamber with an arm secured thereto for opening the valve, and means secured to said arm and boss for automatically closing said valve.

10. A carbureter, comprising a casing, a tubular member secured to said casing, means connected to the tubular member for supplying a gaseous mixture to a mixing chamber formed within the casing, an auxiliary mixing chamber adjacent said mixing chamber, means mounted within the mixing chamber for regulating the mixture passed to the auxiliary chamber, and means mounted within the last named chamber for admitting fresh air from different directions.

11. A carbureter, comprising means for supplying a gaseous mixture to a mixing chamber, an auxiliary mixing chamber adjacent to said mixing chamber, means mounted within the mixing chamber for regulating the volume of gaseous mixture passed to the auxiliary chamber, and means mounted within said auxiliary chamber for supplying fresh air to the gaseous mixture from different directions.

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