W. P. KIDDER.

CARBURETER.

APPLICATION FILED APR. 4, 1914.

1,238,787. Patented Sept. 4, 1917.

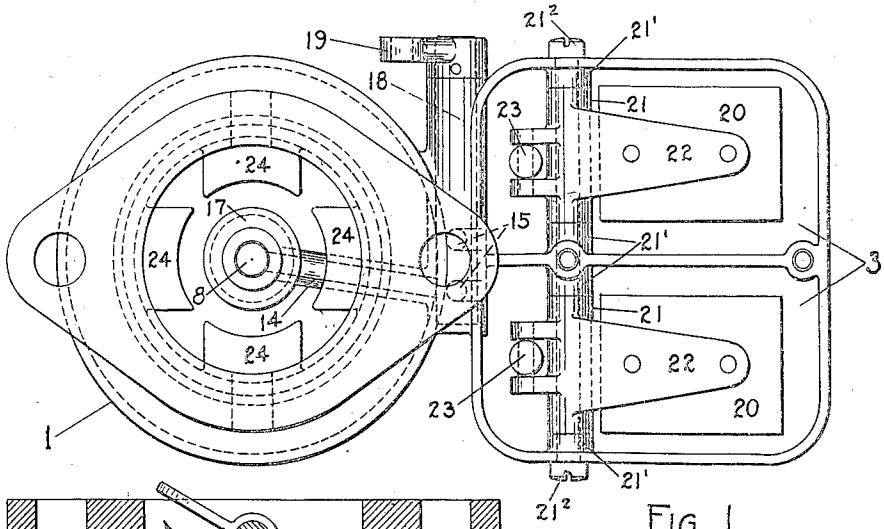


FIG. 1

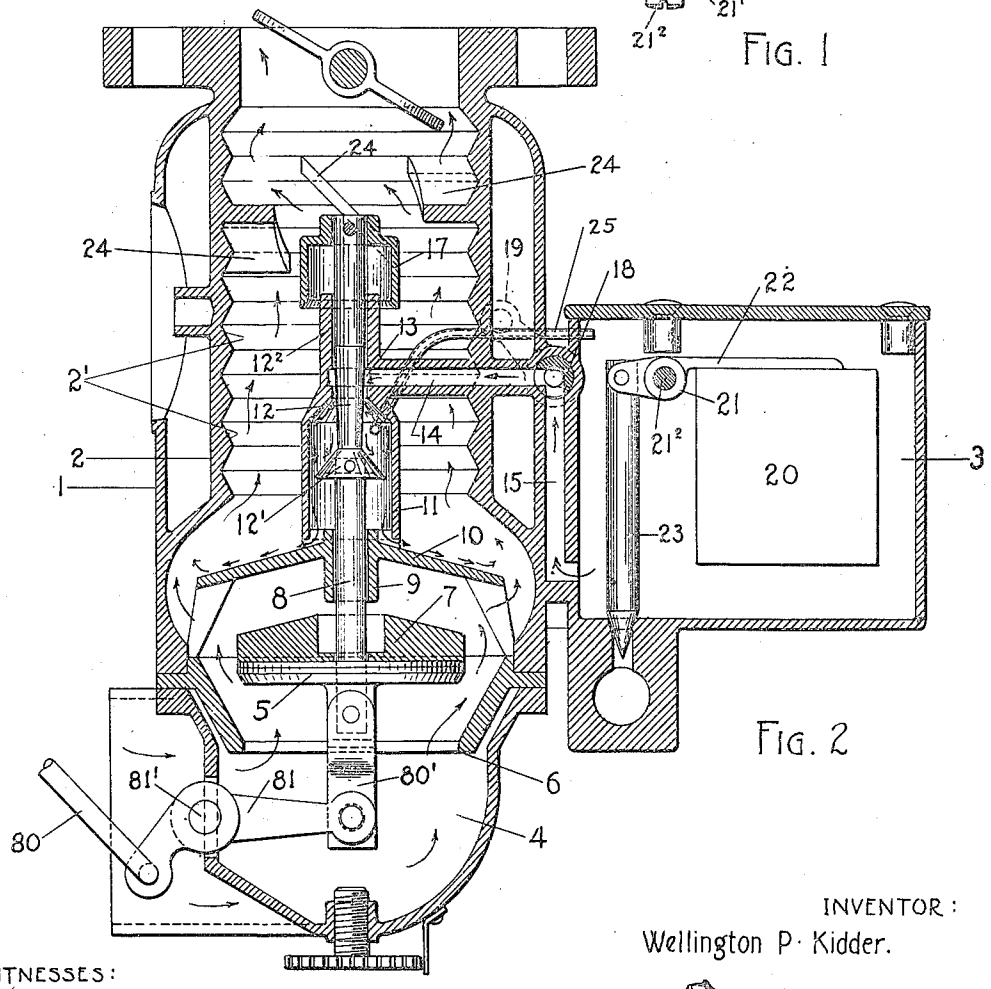


FIG. 2

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CARBURETER.

1,238,787. Specification of Letters Patent. Patented Sept. 4, 1917.

Application filed April 4, 1914. Serial No. 829,693.

To all whom it may concern:

Be it known that I, WELLINGTON P. KIDDER, a citizen of the United States, residing at Boston, county of Suffolk, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to an improvement in carbureters and particularly to the carbureting of air for use in internal combustion motors and the like.

The particular improvements involved in my present invention relate to the use of different grades of fuel and to the more perfect vaporization of such different grades. These and other features will be more fully described in the specification which follows. In the drawings forming a part of that specification I have shown as an illustrative embodiment, a form of carbureter which I have found highly efficient and satisfactory in practical use. Throughout specification and drawings like reference numerals are correspondingly applied and in these drawings:

Figure 1 is a plan view of a carbureter in accordance with my invention, and

Fig. 2 is a central vertical section thereof.

The cylindrical fixed shell of the carbureter consists of the main walls 1, the air intake sleeve 2 and the dual float chamber 3. The base of the main shell is provided with a curved flange providing a lateral air intake 4 delivering to the interior of the carbureter. The passage of air through the carbureter is controlled by an automatic air valve 5 adapted to seat on a dished seat 6 fixed in the base of the carbureter just above the air intake. A loose collar weight 7 on said air valve acts as a check to interrupt any tendency of the valve to chatter on its seat.

The valve is seated and unseated by a positively controlled vertical reciprocation from the driver's seat. The connection is made through a link 80^1 which pivotally connects the valve stem 8 to the inner arm of the lever 81. The lever 81 is pivotally mounted on the lower part of the carbureter casing at 81^1. A flexible connection 80 affords control from the driver's seat.

The stem 8 is guided just above the valve in a cylindrical guide 9. The guide 9 is also the hub of an umbrella flange 10 over which the downwardly discharged fuel spreads and from the circumference of which the fuel in a finely divided spray is taken up by the uprushing air. Above the umbrella flange 10 the valve stem enters a bell crowned cylinder 11 and is tapered as indicated to provide a fuel valve 12 controlling discharge of the fuel from the lateral fuel intake port 13, which port communicates with the dual float chamber by a lateral fuel passage 14 and a vertical fuel passage 15. Just below the taper 12, the stem has a spreader collar 12^1 over which the fuel flows as it discharges through the port 13. Above the fuel intake port 13 the valve stem is guided in a cylindrical guide 12^2 and is pinned at its upper end in an inverted cupped collar 17. The collar 17 pockets the air pressure at the top of the stem and serves to prevent any direct upward fuel discharge.

The supply of fuel through the passages 15 and 14 is controlled by a two way valve 18 which is manipulated from the driver's seat by a suitable rocker lever 19 arranged for suitable connection with the hand control.

The float chamber is dual, having one compartment for gasolene and the other for low grade fuel such as kerosene. Each float 20 is connected with a lever 22 which has a hub 21 set between bearings 21^1 and held in place by pivot screws 21^2. Pinned in ears projecting from each hub 21 and opposite to the float lever 22 is a valve 23 controlling respectively the supply of gasolene and low grade fuel to the compartments of the dual float chamber.

The inner face of the air intake sleeve 2 is corrugated as indicated at 2^1, Fig. 2, so as to present to the mixture a plurality of deflecting surfaces effective to finely subdivide the charge. In order that the charge may be completely vaporized, I locate in the path of the mixture a plurality of inclined fins 24. These fins are relatively staggered and give to the charge a spiral whirl effective to completely vaporize it so that the charge is delivered as a dry gas to the engine intake.

The carbureter is heated to any desired degree by the exhaust from the motor. The fuel valve 12 and air valve 5 open and close together. The fuel valve 12 has clearance in the guide 12^2 so that the valve does not contact with any portion of the guide in the movements of the stem. This insures durability and uniform action and avoids all erratic tendencies.

For starting on gasolene priming, I provide a direct connection from the float chamber by means of a small open tube 25 connecting the upper part of the gasolene compartment with the interior of the bell crowned cylinder 11. This priming tube is useful at other times to take off and utilize any evaporation which might and usually does take place when the engine is running and when the carbureter is hot. The operation of this tube is as follows: In starting the engine, the gasolene float chamber is flooded by depressing its float 20 through any suitable mechanism operable from the dash, thereby raising the fuel level in the chamber, and causing the fuel to flow through the priming tube 25, down into the carbureter. As soon as the engine is started, the float is released, and the fuel level permitted to drop back to normal, thereby rendering the priming tube 25 ineffective. The float chamber 3 is always open to atmospheric pressure, so that the pressure therein is not varied, and the flow of the fuel consequently not limited.

In operation, air enters at the base through the air intake 4 and passes up by the air valve 5 and around the circumference of the spreader flange 10. The fuel enters through the heated passageways 15, 14, and is at once divided into two films. One film flows down around the fuel valve and over the spreader collar 12^1. The other film follows the inside surface of the bell crowned cylinder. The fuel flows down on to the umbrella flange 10 and is further atomized by spreading over the vaporizing surface provided by this flange. As soon as it reaches the circumference of the flange 10 it is caught up by the inrushing air dashed in a spiral whirl against the many hot corrugations 2^1. In this action the inclined fins 24 give to the charge a rotary or centrifugal force effective to very finely subdivide it and deliver it to the intake of the engine in the form of a dry completely vaporized gas.

In using this type of carbureter it is desirable to start on gasolene until the carbureter is hot and then to shift to all or any desired proportion of the low grade fuel. This shifting is effected by means of the two way valve 18 controlled from the driver's seat.

Various modifications in the form and construction of my device may be obviously resorted to without departing from the spirit of my invention if within the limits of the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. In a carbureter having an air intake, a fuel discharge in opposition thereto, an air valve for said air intake and a fuel valve for said fuel discharge, both valves on the same valve stem, and a plurality of umbrella fuel spreader flanges in the path of said fuel discharge.

2. In a carbureter having an air intake, a fuel discharge in opposition thereto, an air valve for said air intake and a fuel valve for said fuel discharge, both valves on the same valve stem, and a plurality of umbrella fuel spreader flanges in the path of said fuel discharge and above said air valve.

3. In a carbureter, a casing having an air intake, a discharge for fuel in said casing, a valve stem passing through said fuel discharge opening, a taper valve on said stem seating in said opening, an air valve on said stem controlling the passage of air through said air intake, a guide for said valve stem above and below said fuel intake, a bell crowned cylinder below said fuel intake and inclosing a part of said valve stem, a spreader flange on said valve stem beneath said fuel intake, a spreader flange beneath said bell crowned cylinder and overlying said air valve and means in the path of the mixture for imparting to the mixture a whirling action as it feeds to the engine.

4. In a carbureter a casing having a primary air intake, a discharge for fuel in said casing, a valve stem passing through said fuel discharge opening, a taper valve on said stem seating in said opening, an air valve on said stem below said taper valve controlling the passage of air through said air intake, a guide for said valve stem above and below said fuel intake, a bell crowned cylinder below said fuel intake and inclosing a part of said valve stem, a spreader flange on said valve stem beneath said fuel intake, a spreader flange beneath said bell crowned cylinder and overlying said air valve and inclined fins in the path of the mixture for imparting to the mixture a whirling action as it feeds to the engine.

5. In a carbureter, a mixing chamber, a casing fixed therein and having an extension providing a fuel inlet passage, said extension constituting a means fixing the casing in said chamber and terminating in a vertically disposed guide, and a valve stem in said guide having a valve thereon controlling the discharge of fuel through said passage.

6. In a carbureter, a mixing chamber, a casing fixed therein, a fuel supply member leading into said casing and constituting a means for fixing the casing in said chamber, a guide vertically arranged in said casing, a valve stem in said guide having a taper controlling the discharge of fuel from said fuel supply member, a spreader on said stem below said fuel discharge, and a second guide below and alined with said first named guide.

7. In a carbureter, a casing, an upwardly directed air intake, a downwardly directed

fuel delivery in said casing in opposition to said air intake, a valve stem, a guide for said stem above said fuel discharge, and a downwardly inclined spreader fixed beneath said fuel delivery and set in the path of the said air intake and constituting a guide for said stem alined with said first-named guide.

8. In a carbureter, a mixing chamber having an upwardly directed air intake, a fuel inlet member fixed in said mixing chamber laterally thereof and terminating in a vertically disposed guide, a valve stem reciprocable in said guide and having a valve controlling said fuel inlet, a spreader sleeved about said valve stem below said inlet and constituting a fixed guide alined with said first-named guide, and an air valve carried by said stem below said spreader and moving with said stem toward and from said fixed spreader.

In testimony whereof I affix my signature in presence of two witnesses.

WELLINGTON P. KIDDER.

Witnesses:

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MARION C. HOBBS.