F. D. ACKLEY.

CARBURETER.

APPLICATION FILED MAY 28, 1920.

1,381,897.

Patented June 21, 1921.

2 SHEETS—SHEET 1.

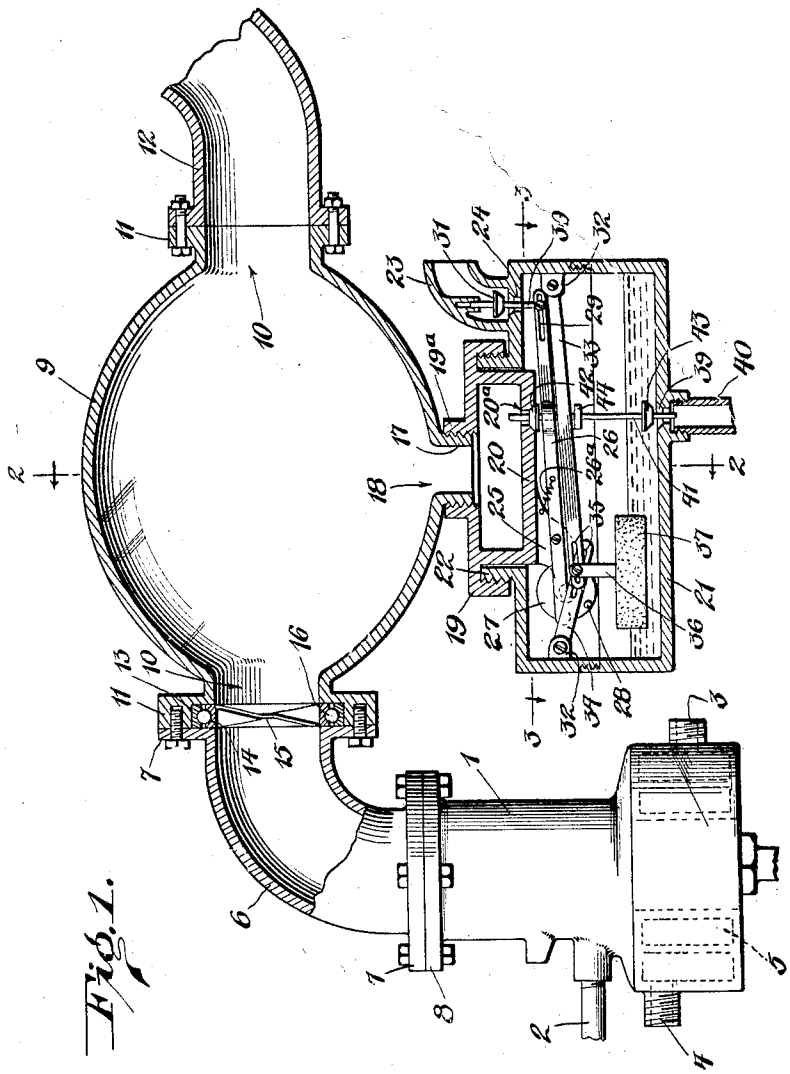


Fig. 1.

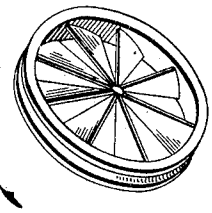


Fig. 4.

Inventor

F. D. Ackley

By Fred P. Lovin

Attorney

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2 SHEETS—SHEET 2.

Fig. 2.

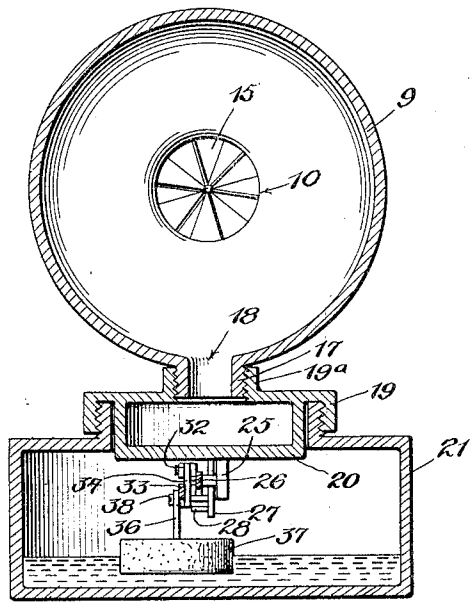
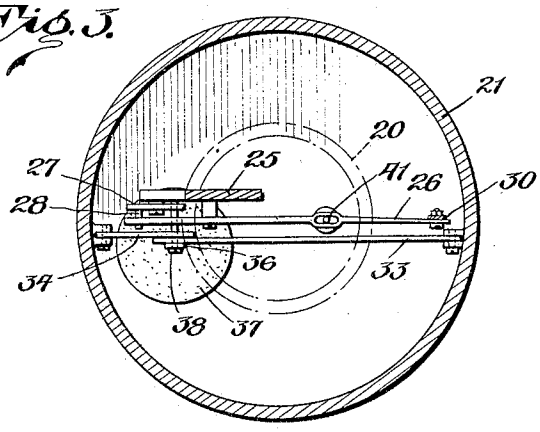


Fig. 3.



Inventor

F. D. Ackley

By Fred P. Goin

Attorney

UNITED STATES PATENT OFFICE.

FRED D. ACKLEY, OF SEATTLE, WASHINGTON.

CARBURETER.

1,381,897. Specification of Letters Patent. Patented June 21, 1921.

Application filed May 28, 1920. Serial No. 385,046.

To all whom it may concern:

Be it known that I, FRED D. ACKLEY, a citizen of the United States, and residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to improvements in carbureters and attachments connected thereto.

An object of the invention is to provide a device which will separate the raw fuel from the atomized explosive fuel.

Another object of the invention is to provide a device which will receive the separated raw fuel and automatically convey it back to the carbureter without interrupting the operation of the carbureter.

The invention also comprehends a combined carbureter and separator structure, the details of which are particularly pointed out in the following description and claims.

In the drawings:—

Figure 1 is a sectional view through the separating device showing the carbureter in full lines.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 1.

Fig. 4 is a detail view of the fan.

1 indicates a carbureter having a gas inlet 2, an inlet 3 from the exhaust manifold exhausting through outlet 4, and having a water jacket 5 with suitable connections (not shown), for circulating water.

An elbow 6 has annular flanges 7 at the ends thereof, one end being secured to a flange 8 on the carbureter through the flange 7 thereon. A fuel chamber 9 of partial spherical construction is provided with oppositely disposed openings 10 for the passage of fuel, and annular flanges 11 for securing the chamber to the elbow and an intake pipe 12.

The chamber has an annular recess 13 at one end around the opening 10, adapted to receive a ball race 14, in which is revolubly mounted a fan 15. The fan blades are secured to the ring 16 which forms part of the ball race.

In the side of the chamber and disposed at the bottom portion is a threaded extension 17 which is formed with a hole 18 communicating with the interior of the chamber. A cap 19 provided with an internally threaded extension 19ª is threaded onto this extension 17, and is formed with a drum 20 of smaller diameter than the cap to form a chamber which communicates with the fuel chamber, and which is provided with a hole 20ª formed into a valve seat at the bottom.

A tank 21 is provided with a threaded projection 22 which is screw threaded into cap 19, and an elbow 23 communicating with the tank and formed with a valve seat 24, through which the admission of air to the tank is controlled, as will be described.

The bottom of the drum 20 has a support 25 formed thereon, to which is pivotally secured a lever 26, having one arm considerably longer than the other, which arm has a slot 29 in the end portion in which is slidably mounted a valve stem 30 which carries a valve 31 adapted to seat in the valve seat 24, and open or close the channel in projection 23 to control the admission of air to the tank.

The tank is formed with lugs 32 on opposite inner walls for supporting the ends of two levers 33 and 34, the other ends of which are formed with slots 35. A rod 36 has a float 37 secured thereto, and the upper end has a pin 38 passing through it, and the slots in levers 33 and 34, to pivotally secure it and the ends of the levers together. This pin also passes through a disk 27 and pivotally mounts the levers and the rod thereto.

A disk 27 is rotatably mounted on the end of the support 25, and is provided with a stop 28 adapted to engage the shorter end of lever 26 when the disk is rotated by the rising or falling of a float and operate the valve controlled thereby. A spring 26ª has one end secured to the longer arm of the lever and the other end to the support 25 for normally exerting a tension to raise the arm.

The bottom of the tank is formed with an opening and valve seat 39, through which gas received by the tank may pass and be conveyed by pipe 40, to a vacuum tank or back to the carbureter. A valve stem 41 extends through lever 26 and supports valves 42 and 43, thereon for alternately opening and closing passages 20ª and 39 for controlling the flow of liquid. A collar 44 is adjustably secured to the valve stem 41 against which lever 26 engages to operate the valves 42 and 43.

In the operation of a gas engine equipped with this device, air for the intake is drawn

in through the carbureter to vaporize the gas or other fuel, and is heated by the water in jacket 5, and the exhaust gas passes through the carbureter.

The vaporized and atomized fuel is drawn up through the carbureter and elbow 6, where it contacts with the fan 15, setting said fan in rotation which throws the gas outwardly into and against the walls of chamber 9. The vaporized gas will pass on through the chamber into the intake pipe and subsequently the cylinder of the engine; but the atomized gas being still in liquid particles, sticks to the walls of the chamber and runs down into drum 20, as will be obvious.

If the tank is empty, the float will rotate the disk through its connections therewith, and stop 28 will engage lever 26, operating the lever to close passage 39 and seat valve 31 in its seat 24, opening passage 20^a to permit the gas in drum 20 to flow into the tank. As the tank fills, the float will rise and allow spring 26^a to raise the lever, closing passage 20^a, opening the air passage through the elbow and opening passage 39 to allow the gas to pass out of the tank back to the carbureter or vacuum tank.

The opening and closing of these valves will continue automatically as will be obvious, and the excess liquid in the mixture will be separated from the vaporized gas, thereby giving the engine a complete mixture which will economize in the operation of the engine, as well as aid in the prevention of carbon.

What I claim is:

A liquid fuel discharge control including a drum to receive the liquid gas particles in the gas stream between the carbureter and the intake manifold, a tank removably supported by the drum, an opening controlled by a valve between said drum and tank, an air inlet to the drum controlled by a valve, a lever pivotedly supported in the drum and actuating said valves in opposite directions, a disk for operating said lever, a valve controlled fluid outlet from the tank, a lever supported within said tank and adapted to actuate said valve for the fluid outlet, and a float connected to said last mentioned lever and adapted to operate the disk, whereby the valve between the drum and tank are reversely actuated, and the air inlet control valve is actuated reversely to the valve between the drum and tank.

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

FRED D. ACKLEY.

Witnesses:

OSCAR J. HANSEN,

SUZANNE MCLAUGHLIN.