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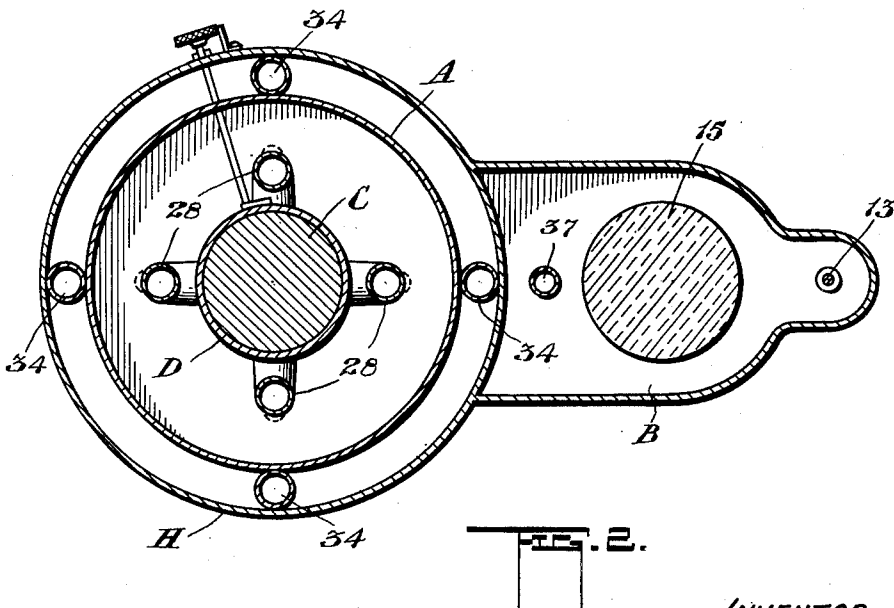
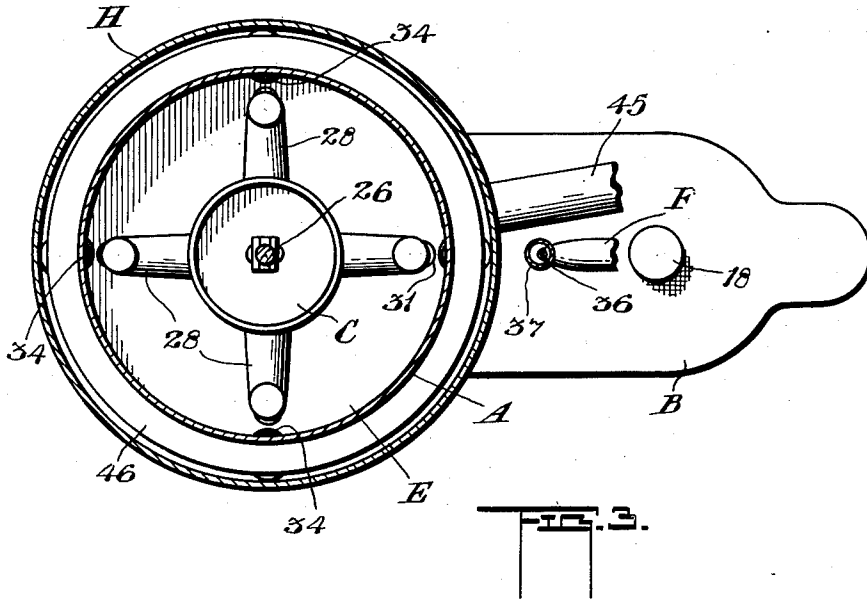
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CARBURETOR

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2 Sheets-Sheet 2



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CARBURETOR

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This invention relates to improvements in carburetors, and the general objects of the invention are to economically produce a dry properly proportioned combustible mixture from a liquid fuel, and generally to improve and simplify the means for doing same.

More particular objects of the invention are to provide a positive feed of the liquid fuel, and the vaporization of the same after atomization, and further to provide for the preliminary heating of the combustible mixture.

In its construction, the invention includes means for maintaining the supply of liquid fuel, and atomizing the same, means for positively feeding the fuel by both pumping means and a compressed air injector, a vaporizing chamber, means for heating the vaporizing chamber from the exhaust gases of an engine, and means for effecting mixture of gases and vapors in the vaporizing chamber, all constructed and arranged as described in detail in the accompanying specification and drawings.

In the drawings:

Figure 1 is a sectional elevation of an embodiment of the invention.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 1.

In the drawings, like characters of reference indicate corresponding parts in all the figures.

Referring to the drawings, A indicates the casing of suitable shape to provide for the various ports and passages, and to contain certain of the working parts.

B indicates the liquid fuel tank designed to contain gasoline, kerosene, crude oil, or other liquid fuel, to be vaporized, and conveniently formed as an extension at one side of the casing A.

The required fuel may be supplied through a conduit 10 to an inlet port 11, controlled by a needle valve 12 on a rod 13, pivoted to the pin 14, on the tank B, the opposite extremity of which is connected to a float 15, by which a determined level of liquid is maintained in the tank B. For convenience in

moving the float in the event of the valve sinking, or for other purposes, I provide a reciprocable plunger 16 in the top of the casing held in raised position by a spring 17, which extends between the top of the casing and a knurled head 18 on the rod 16, the upward movement of the rod being limited by a pin 19, which engages the underside of the casing.

A certain proportion of the liquid fuel in the chamber B is fed to the bottom of the casing A by means of a conduit 19^a, which may at one point have a screen 20 therein, opposite the drain plug 21.

The liquid fuel which accumulates in the bottom of the casing A is adapted to be positively raised therefrom by pumping means, the particular pumping means, which I have illustrated, comprises a reciprocable plunger C, mounted in a cylinder D and actuated by a cam 22 on a cross shaft 23, which may be driven in any convenient way as from the pulley 24.

The strap 25 surrounds the cam and is connected to the plunger C by a link 26. A port 27 in the side of the casing D permits the liquid fuel to float into the same, and on the downward movement of the plunger C, it is propelled through distributing pipes or nozzles 28, into the portion of the interior of the casing A, above the liquid level at the bottom thereof.

A plurality of distributing nozzles 28 are provided, arranged at a slight inclination to the vertical, and communicating through a port 29 at the bottom of the cylinder D. These nozzles 28 are tubular in form and provided on the outer side with discharge ports 30, having on the outside inclined deflecting plates 31, directed upwardly, whereby the discharged liquid fuel will be directed upwardly into the part of the casing A, which constitutes a vaporizing chamber E.

Conveniently the bottom of each of the nozzles 28 is provided with a screen 32 opposite a drainage plug 33, and a check valve 32^a, the check valve preventing any condensate returning to the cylinder D.

The liquid fuel discharged from the nozzles 28 is designed to be atomized and to facilitate this, provision is made for the dis-

charge of suitable quantities of air adjacent to the point where the fuel is discharged from the nozzles 28. The means I show for this purpose, comprise air discharge nozzles 34, of tubular form designed to discharge adjacent to the upper ends of the nozzles 28, the lower extremities of the nozzles 34 communicating with an air manifold 35, which communicates with an air supply either under atmospheric or any desired pressure. In the case of the atmospheric pressure, the air will be drawn in by the suction of the engine.

Means are also provided to provide a further supply of fuel and air in the upper part of the vaporizing chamber E. These means include an injector device F, having an interior air nozzle 36, connected to a supply of compressed air, and an outer fuel conduit 37, the lower extremity of which extends beneath the surface of the liquid fuel in the tank B.

The upper extremity of the conduit 37 is connected to a discharge nozzle 38 discharging near the top and at the centre of the vaporizing chamber E.

To further provide for mixing of the fuel and the air in the upper part of the vaporizing chamber, a mixing screen G is provided conveniently of conical form, and supported on the interior side walls of the chamber E.

An outlet port 39 is provided in the top of the vaporizing chamber E communicating with a connecting conduit 40, from which connections to the cylinder of the engine, in which the combustible fuel is to be used, may be made. This conduit is preferably provided with a back-firing screen 41, and a vapor control valve 42.

If it is desired to introduce water vapor into the combustible mixture, it may be done through a pipe 43 connecting the side of the conduit 40.

For many instances, it will be desirable to pre-heat the combustible mixture while in the vaporizing chamber E. For this purpose, I surround the casing E with a heating chamber H, through which the supply of hot gases conveniently obtained from the exhaust of the engine is desired to pass. These hot gases being introduced through a port 44 at one side and out a conduit 45 at the opposite side, which matter may be conveniently led to the muffler when the device is used on an automobile.

To provide for proper circulation of the heating gases, a spiral baffle 46 may be arranged within the chamber H.

It will also be found convenient to regulate the quantity of hot gases supplied by a thermostat I, of any convenient form and connected to the conduit 47, which supplies the gases to the port 40.

In many instances, it is desired to provide for additional quantities of air in the upper part of the vaporizing chamber E. For this purpose I provide an auxiliary air conduit

48, opening into the chamber E near the top thereof, and controlled by a butterfly valve 49.

As a further means to prevent backfiring, I may provide a valve 50 in the conduit 40, adapted to be spring held in closed position, but designed to be opened by the suction of the engine.

In the operation of the device, the pump C is positively operated by a turning of the shaft 23. This continuously discharges fuel from the nozzle 28, which is atomized by the air passing through the nozzles 34, the engine producing a suction upon the chamber E in the usual way. The chamber E being of relatively large size, temporarily maintains the combustible mixture in suspension in order to enable the vapors of the same to be complete.

As the gases or air rises to the top of the chamber, it meets further quantities of gas and air introduced through the conduit 38, and coming against the mixing screen C, is thoroughly admixed before passing out of the chamber. The heating gases passing through the chamber A, will also serve to complete the vaporization and form the proper proportion of dry combustible mixture.

As many changes could be made in the above construction, and many apparently widely different embodiments of my invention, within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:

1. A carburetor comprising a casing, the upper part of which is adapted to form a vaporizing chamber, the lower part of which is adapted to contain liquid fuel, a fuel tank connected to the bottom of the casing, a float valve arranged in the same, controlling the level of liquid, a conduit between the tank and the casing, a reciprocating pump in the casing, a plurality of nozzles for the same having spaced openings and designed to discharge the fuel upwardly, a plurality of air nozzles opening adjacent to the aforesaid nozzles, an injector adapted to be connected to a supply of compressed air, and to the fuel in the aforesaid tank, a discharge nozzle for the injector in the upper part of the vaporizing chamber, a screen in the upper part of the vaporizing chamber, a heating chamber surrounding the casing, and means for passing hot gases through the heating chamber.

2. The device as claimed in claim 1, in which an auxiliary air supply conduit is connected to the upper part of the vaporizing chamber.

3. In a carburetor and in combination a casing formed with a vaporizing chamber in the upper part thereof and designed to contain a

supply of liquid fuel in the bottom thereof, pumping means provided to elevate the liquid fuel, a plurality of nozzles connected to the pumping means designed to discharge the fuel in an upward direction, a plurality of
5 air nozzles discharging adjacent to the aforesaid nozzles, means in the upper part of the casing for causing admixture between the fuel and the air, the fuel nozzles being tubular in
10 form and provided with a plurality of discharge ports having deflecting plates on the exterior thereof.

4. The combination of the device as claimed in claim 3 of compressed air means for feeding
15 further quantities of fuel to the upper part of the vaporizing chamber.

5. The combination of the device as claimed in claim 3, of an injector adapted to supply
20 further quantities of fuel and air to the upper part of the vaporizing chamber.

In witness whereof I have hereunto set my hand.

CHARLES NELSON POGUE.

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