May 3, 1932. W. C. CARTER 1,856,464

CARBURETOR

Filed April 29, 1929

Fig. 1.

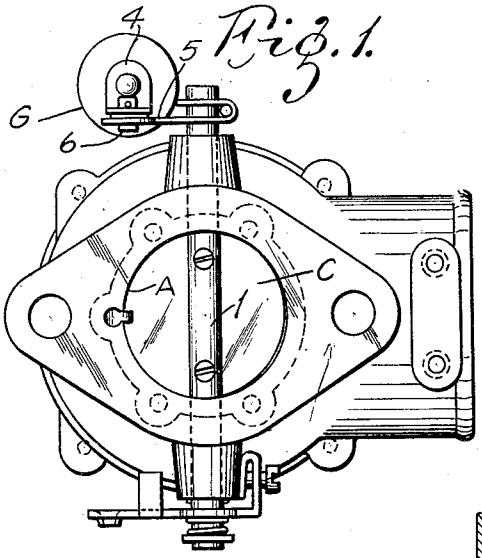


Fig. 2.

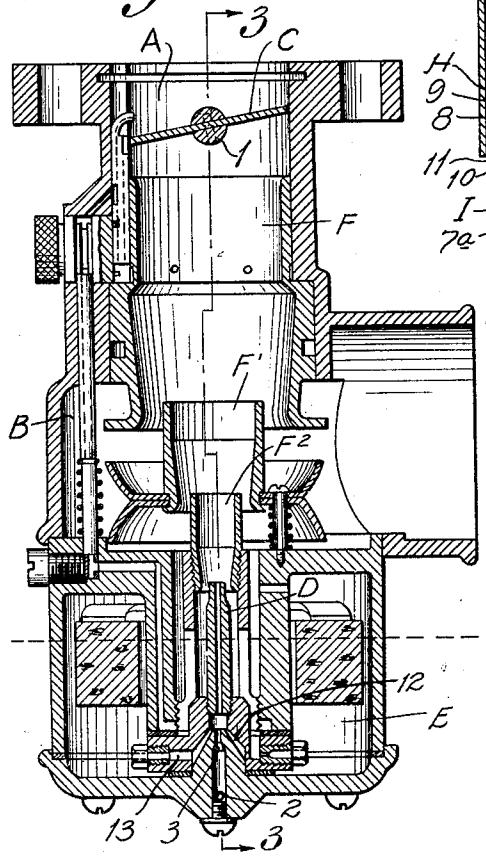
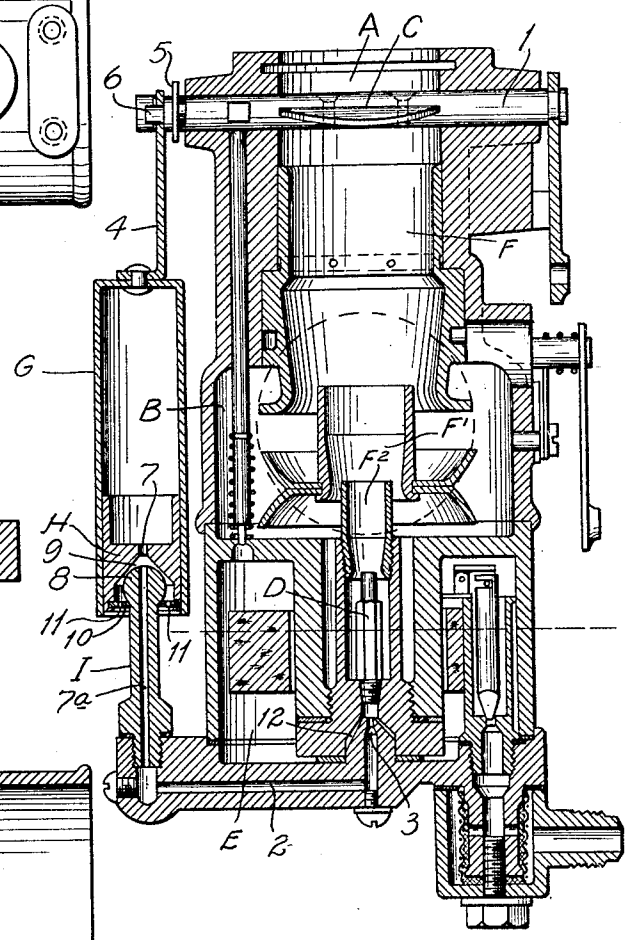


Fig. 3.



INVENTOR:
WILLIAM C. CARTER.

BY Bakewell & Church

ATTORNEYS.

Patented May 3, 1932

1,856,464

UNITED STATES PATENT OFFICE

WILLIAM C. CARTER, OF FLINT, MICHIGAN

CARBURETOR

Application filed April 29, 1929. Serial No. 359,096.

This invention relates carburetors.

One object of the invention is to provide a carburetor which is of such construction that when the throttle valve is moved suddenly towards its open position, an accelerating charge, consisting of liquid fuel mixed with air, will be supplied under pressure for a prolonged period to the main passageway of the carburetor.

Another object is to provide a carburetor which is of such construction that when the throttle valve is moved suddenly towards its open position, a stream of air under pressure will be forced through an orifice arranged in such relationship with the fuel nozzle or fuel supplying element of the carburetor, that the jet of air issuing from said orifice will exert a siphoning action on a supply of liquid fuel surrounding said orifice, and thus cause an accelerating charge consisting of air mixed with a supply of liquid fuel of considerable volume, to be carried upwardly through the nozzle.

And still another object is to provide a carburetor that is equipped with a pump of novel construction, which operates in conjunction with the throttle valve to produce pressure which is utilized to supply an accelerating charge to the carburetor.

Figure 1 of the drawings is a top plan view of a carburetor embodying my present invention.

Figure 2 is a vertical sectional view of said carburetor; and

Figure 3 is a vertical sectional view, taken on the line 3—3 of Figure 2.

I have herein illustrated my present invention embodied in a carburetor of the design shown in my pending application for patent Serial No. 359,100, filed April 29, 1929, which matured to Patent No. 1,809,507, granted June 9, 1931, but I wish it to be understood that my invention is applicable to various other types and kinds of carburetors.

In the accompanying drawings which illustrate the preferred form of my invention. A designates the main passageway of the carburetor whose upper end communicates with the intake pipe of the engine on which the carburetor is used, B designates an air chamber which communicates with the lower end of said main passageway, C designates a throttle valve arranged at the upper end of the main passageway, D designates the fuel supplying element of the carburetor, herein illustrated as a fuel nozzle which is arranged vertically so as to discharge upwardly towards the main passageway A, and E designates the float chamber of the carburetor. The carburetor herein illustrated is provided with a plurality of venturis or suction amplifiers F, F′ and F² for producing different stages of suction amplification, but said suction amplifiers or venturis form no part of my present invention.

My present invention consists primarily of a carburetor equipped with a pump or similar device, arranged to operate in conjunction or in unison with the throttle valve, and designed so that when said throttle valve is moved suddenly towards its open position, said pump will force a stream of air under pressure through an orifice so as to produce in effect an injector which causes an aerated accelerating charge to be supplied under pressure for a prolonged period to the main passageway of the carburetor. The particular type or kind of pump with which the carburetor is equipped is immaterial, and said pump can be operated in any preferred manner, or by any suitable means, so long as it performs the function for which it is designed, when the throttle valve is moved towards its open position. Preferably, said pump is operatively connected with the throttle valve shaft 1 in such a way that a sudden movement of said shaft in a direction to open the throttle valve when the motor is in operation, causes air to be compressed and forced through an air duct 2 which leads to an air orifice 3 that discharges upwardly into the fuel passageway of the nozzle D. The pump herein shown comprises a cylinder G arranged in an upright position at one side of the body of the carburetor, a piston H in said cylinder, a rigid arm 4 attached to the upper end of the cylinder G and projecting upwardly from same, and a lever 5 on the throttle valve shaft 1 attached by a pivot pin 6 to the upper end of the arm 4. The piston H of the

pump is connected by a universal joint to the upper end of a stationary or rigid standard I, and said piston is provided with an air port 7 that registers with an air duct 7ª in the standard I, the lower end of said air duct 7ª communicating with the air duct 2, previously referred to, that leads to the orifice 3 beneath the fuel nozzle. As shown in Figure 3, the universal joint above mentioned is formed by a ball 8 on the upper end of the standard I, that is seated loosely in a socket 9 formed in the underside of the piston H, said ball being held in said socket by a removable retaining plate 10 in the piston which is provided with air passageways 11 so as to permit air to flow freely into the socket 7, and thence pass either into the air duct 7ª in the standard I, or into the cylinder G through the port 7 in the piston.

The air orifice 3, which, in effect, constitutes the discharge opening of the pump, is spaced away from the lower end of the fuel passageway of the nozzle D, so that the jet of air which discharges upwardly through said orifice will exert a siphoning action on an annular fuel passageway 12 that surrounds the orifice 3, and to which fuel is supplied from the float chamber by a fuel duct 13, as shown in Figure 2.

In a carburetor of the construction above described a sudden movement of the throttle valve A into its wide open position, when the motor is in operation, imparts a quick downward stroke to the cylinder G of the pump, thereby causing the air in said cylinder to be compressed and forced through the port 7 in the piston, and thence through the ducts 7ª and 2 to the orifice 3 beneath the fuel nozzle D. The jet of air, in escaping upwardly through the orifice 3, produces a siphoning action on the fuel in the fuel passageway 12, that causes a relatively great quantity of fuel to be sucked out of said passageway, mixed with the air emerging from the orifice 3, and then carried upwardly through the nozzle to form an accelerating charge of liquid fuel and air which passes into the main passageway A of the carburetor. Due to the fact that this accelerating charge continues to flow upwardly through the nozzle D during the entire downward stroke of the cylinder G of the pump, said charge will be supplied for a sufficiently long period to the main passageway of the carburetor to accelerate the speed of the engine on which the carburetor is used.

A pump of the construction above described can be used in various ways to produce pressure that is utilized to supply an accelerating charge to the carburetor, and accordingly, I wish it to be understood that my invention is not limited to a carburetor comprising parts of the particular kind and arrangement herein described and illustrated.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A carburetor provided with a main passageway, a throttle valve for said passageway, a pump arranged at one side of the body of the carburetor and provided with a reciprocating cylinder, a connection between said cylinder and the throttle valve shaft, a piston in said cylinder, a stationary support on which said piston is rockably mounted, an air orifice arranged so as to discharge towards the main passageway of the carburetor, a fuel passageway arranged adjacent said air orifice, and an air passageway through which air under pressure is discharged from said pump cylinder to said orifice when the throttle valve is moved towards its open position.

2. A carburetor provided with a main passageway, a throttle valve for said passageway, an injector for delivering an accelerating charge of fuel and air to said main passageway, and a pump at one side of the body of the carburetor for causing said injector to act, consisting of a reciprocating cylinder operatively connected with the throttle valve shaft, a piston in said cylinder provided with an air port, a stationary support to which said piston is connected by a ball and socket joint, and an air duct in said support registering with the port in the piston and leading to said air orifice.

3. A carburetor provided with a main passageway, a throttle valve for said passageway, a pump for producing pressure that is utilized to supply an accelerating charge to said main passageway, said pump comprising a reciprocating cylinder operatively connected with the throttle valve, a piston in said cylinder, and a support on which said piston is rockably mounted provided with an air passageway that registers with an air port in said piston.

WILLIAM C. CARTER.