Feb. 16, 1937. J. HEWITSON 2,070,598

PRESSURE FEED CARBURETOR

Filed March 14, 1935

Fig. 1.

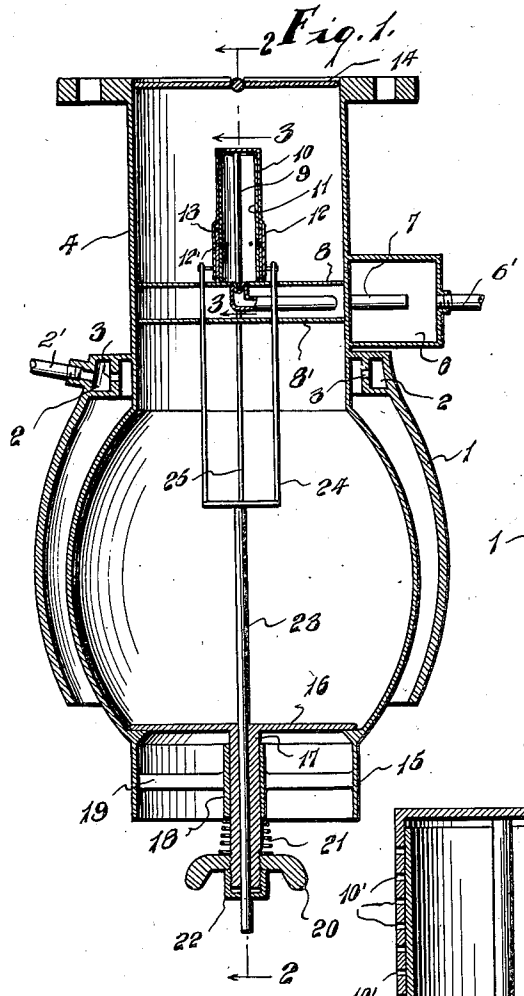


Fig. 2.

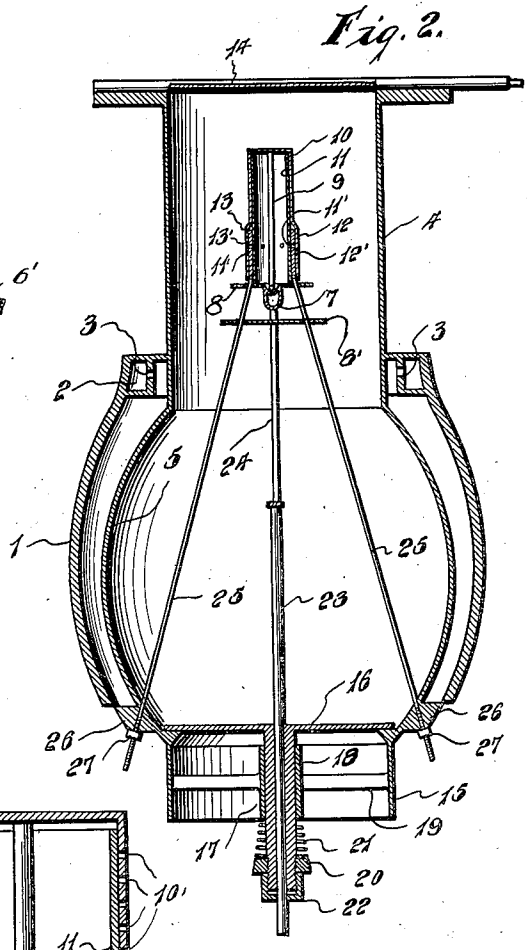
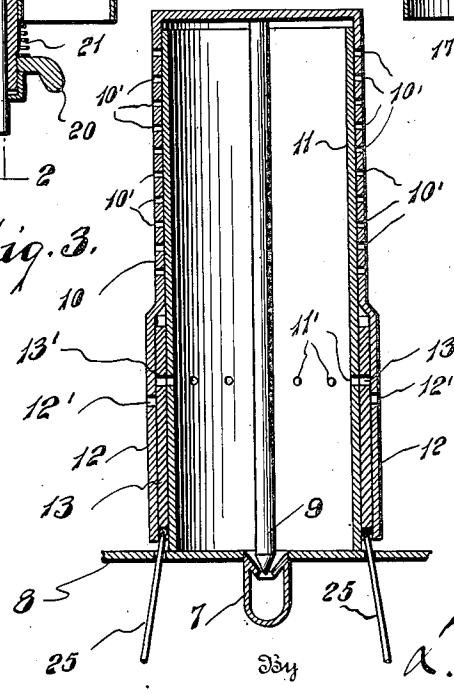


Fig. 3.



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PRESSURE FEED CARBURETOR

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5 Claims. (Cl. 261—39)

An object of this invention is the provision of a carburetor for internal combustion engines which will give the optimum proportions of fuel and air to the engine for carbureting the same in accordance with the varying temperatures and speeds of the engine.

Another object of the invention is that it embodies in itself thermostatic means that automatically actuate parts for producing a lean or a rich mixture of fuel for the engine to accord with weather conditions and engine speeds.

A further object is to provide a carburetor which is of a cheap and efficient structure and which is thermostatically controlled.

To the attainment of the above, and other objects which will later appear, the invention consists of the improvement now to be described and definitely claimed.

In the drawing, which forms part of this specification:

Figure 1 is a sectional view through a carburetor in accordance with this invention,

Figure 2 is a sectional view on the line 2—2 of Figure 1, and

Figure 3 is a detail enlarged sectional view on the line 3—3 of Figure 2.

The jacket 1 of the improvement is of steel or like metal, and is of a thickness to prevent expansion or contraction by heat or cold. The jacket is of globular shape and has a closed top and an open bottom. In and at the top of the jacket there is an annular heat receiving chamber 2 that has a pipe connection with the engine exhaust, designated 2'. The inner wall of the chamber has ports 3.

Passing centrally through the closed top of the jacket 1 there is the tubular neck 4 of the carburetor body 5. The substantially globular body 5 is located in the jacket 1 in close proximity to the inner wall thereof. The body 5 is thin pewter or other metal which is highly susceptible to expansion and contraction.

Formed on the neck 4 there is a closed receptacle 6 into which gasoline is pumped through a pipe 6' by a pump (not shown) which is operated by the engine (also not shown). Leading from the gasoline receptacle into the neck 4 there is a tube 7 that has an offset end secured in the center of the outer of two spaced plates 8 and 8' in the neck 4. This end of the tube 7 is provided with a seat for a needle valve 9 whose stem is secured to the closed top of the outer sleeve 10 of the nozzle of the improvement. The sleeve 10 has a closed top and below said top the sleeve is provided with a spaced series of annular slits affording gasoline outlet ports 10'. The sleeve 10 is guided for movement on a standpipe 11 fixed on the plate 8.

For a distance from its open end the sleeve 10 has an offset portion or skirt 12 that is provided with slitted ports 12'. Guided for movement between the skirt 12 and the standpipe 11 there is the inner and short sleeve 13. The short sleeve has slits affording ports 13' and the pipe 11 has slitted ports 11' that normally register with the ports 13', when the engine is cold and is not in operation.

In the mouth of the neck 4 there is the throttle valve 14.

The end of the thermostatic body 5, that extends through the open end of the jacket 1 is formed with a tubular extension 15. The part 15 has, on its inner end a seat for an air inlet disk valve 16. The stem 17 of the valve 16 is hollow and is guided through a boss 18 centrally formed on a spider 19 in the part 15. The stem 17 is threaded and has screwed thereon a thumb nut 20 that contacts with and adjusts the tension of a light helical spring 21 arranged on the stem between the nut and the boss 18. This spring regulates the opening of the valve 16. The thumb nut 20 may be held in spring adjusted position by a cap nut 22 which is screwed on the stem 17. This cap nut, however, may be also screwed on a rod 23 that has a yoke 24 whose arms are pivotally connected to the sleeve 10 and may thus provide a gasoline regulating element which works in cooperation with the air intake valve 16.

A pair of rods 25 are pivoted to and extend angularly, in opposite directions, from the short inner sleeve 13. These rods pass through bosses 26 on the outer opposite faces of the carburetor. Nuts 27 are screwed on the threaded ends of the rods and engage with the bosses and whereby the short sleeve 13 may be adjusted longitudinally between the skirt 12 of the outer sleeve 10 and the pipe 11.

The stationary standpipe 11 is filled with gasoline under pressure by the fuel pump. When the engine is cold and not in motion the elements of nozzle are arranged as shown in the drawing. The ports 10' are covered by the pipe 11 and the ports 11' and 13' are in registering alinement. The ports 12' in the skirt 12 of the sleeve 10 are arranged below the said registering ports 11' and 13' and the sleeve 10 rests on the plate 8. The engine is "turned over" by the starter and opens the throttle 14 and the automatic air valve 16. This builds up a low vacuum in the carburetor and moves the sleeve 10 and skirt 12 to

cause its ports 12' to register with the ports 13' and 11' so that the engine draws in a rich fuel because of the limited amount of air available. When the engine fires the air valve will further open by the suction created by the engine and the rod 23 will further raise the sleeve 10 in a manner to be described to uncover its series of ports 10' to deliver into the air column in the carburetor body, and to cause to mix with such air, quantities of gasoline, that mix with the air so that the mixture in desired grades of richness is delivered to the engine to suit its running speeds or loads. As the engine becomes heated the exhaust gases therefrom flow into the chamber 2 and through its ports 3 onto the body 5, causing said body to expand. The expansion of the body causes the movement of the rod 23 to move the nozzle sleeve to bring its series of ports 10' to uncovered positions, as above described. When the body expands the holding rods 25 cause the inner sleeve 13 to move and bring its ports 13' out of register with the ports 11'. The needle valve 9 functions only to close the gasoline pipe 7 when the motor is not in operation.

My improvement is automatic in action and dispenses with a great number of parts necessary in the construction of ordinary carburetors. My improvement will function when arranged in any position and produces a perfect vaporization of gasoline and air when mixed in the air column.

Further detailed description is not believed necessary, but it is to be understood that I hold myself entitled to make such changes from the construction illustrated and described as fall within the scope of what I claim.

I claim:—

1. A carburetor for internal combustion engines, comprising a thermostatic body having an air inlet valve, and a throttle valve, a gasoline nozzle comprising inner and outer movable members each provided with ports, and the ports for the outer member being arranged in spaced series, a fixed guide pipe for the members normally closing the outer series of ports in the outer nozzle member and having ports normally in register with those of the inner member, means for directing gasoline under pressure into the nozzle means on the closed top of the outer nozzle member for regulating the flow of gasoline into the nozzle, means actuated by the cranking of the engine creating a suction to open the throttle and air valve, means operated by the air valve for moving the outer nozzle member to bring its ports to register with those in the inner member and guide pipe and to direct gasoline through such ports to mix with the air in the body, means actuated by the expansion of the body for successively uncovering the outer ports in the outer nozzle member, and means actuated by such expansion for moving the inner nozzle member.

2. A carburetor for internal combustion engines comprising an expansible body having a throttle valve at its outlet end and an air inlet valve in its other end, a gasoline nozzle in the body, comprising inner and outer movable members and a fixed guide for said members, each of said members having ports and those of the outer member being in spaced series and initially closed by the guide member, a tube for conducting gasoline under pressure into the nozzle, a needle valve on the outer sleeve initially closing the tube, a rod support for the outer sleeve connected with the air valve, and rod supports for the inner sleeve carried by the body, and means to heat the body to expand said body.

3. A carburetor for internal combustion engines comprising an expansible body having a throttle valve at its outlet end and an air inlet valve in its other end, a gasoline nozzle in the body, comprising inner and outer movable members and a fixed guide for said members, each of said members having ports and those of the outer member being in spaced series and initially closed by the guide member, a tube for conducting gasoline under pressure into the nozzle, a needle valve on the outer sleeve initially closing the tube, a rod support for the outer sleeve connected with the air valve, and rod supports for the inner sleeve carried by the body, and means adjustable to all of said rods for regulating the length of the rods and the position of the nozzle sleeves on such rods.

4. A carburetor for internal combustion engines comprising an expansible body having a throttle valve at its outlet end and an air inlet valve in its other end, a gasoline nozzle in the body, comprising inner and outer movable members and a fixed guide for said members, each of said members having ports and those of the outer member being in spaced series and initially closed by the guide member, a tube for conducting gasoline under pressure into the nozzle, a needle valve on the outer sleeve initially closing the tube, a rod support for the outer sleeve connected with the air valve, and rod supports for the inner sleeve carried by the body, a non-expansible jacket around the body, a chamber therein to receive a heating medium, and said chamber having ports to direct the heated medium against this body to expand the body.

5. A carburetor for internal combustion engines comprising an expansible body having a throttle valve at its outlet end and an air inlet valve in its other end, a gasoline nozzle in the body, comprising inner and outer movable members and a fixed guide for said members, each of said members having ports and those of the outer member being in spaced series and initially closed by the guide member, a tube for conducting gasoline under pressure into the nozzle, a needle valve on the outer sleeve initially closing the tube, a rod support for the outer sleeve connected with the air valve, and rod supports for the inner sleeve carried by the body, means for heating the body to expand said body, and adjustable spring means for regulating the air unit valve with respect to its seat.

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