Feb. 11, 1930. N. E. GASTON 1,747,066

CARBURETOR

Filed Nov. 16, 1928

Fig. 1.

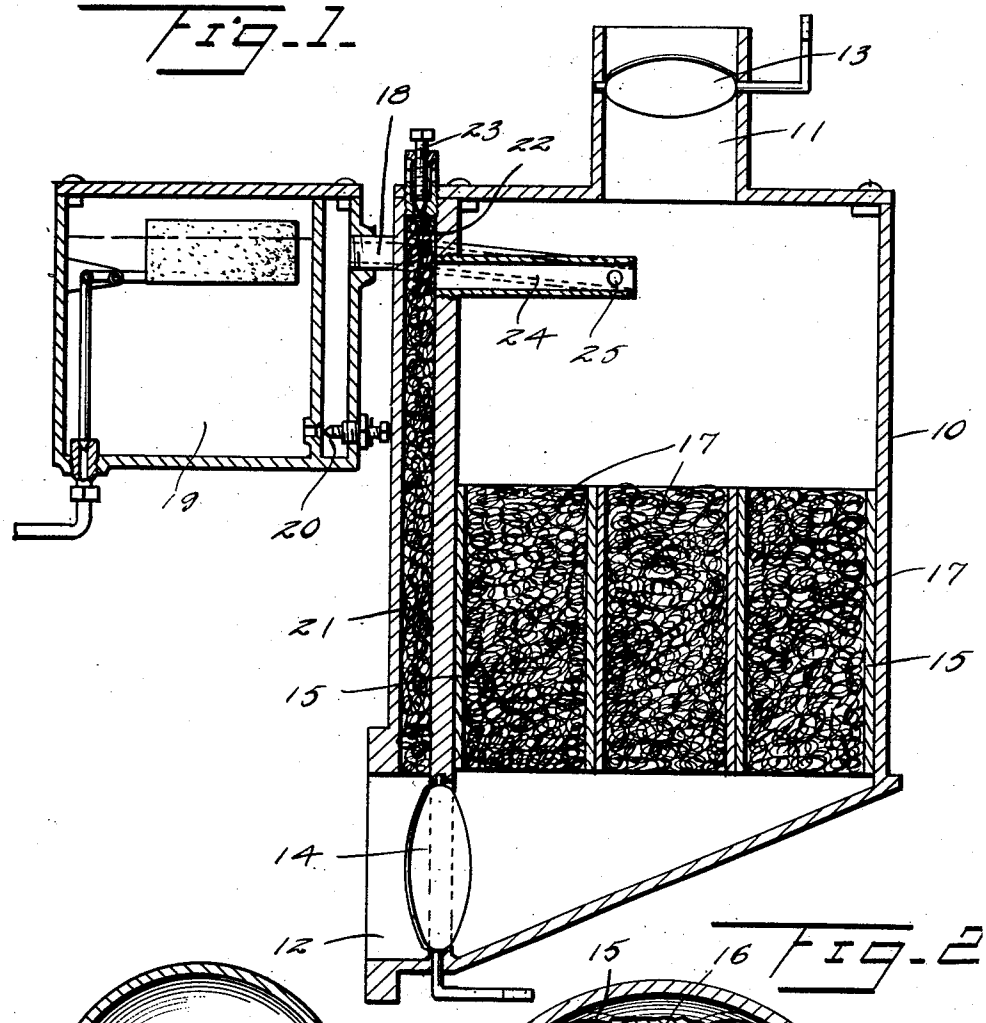
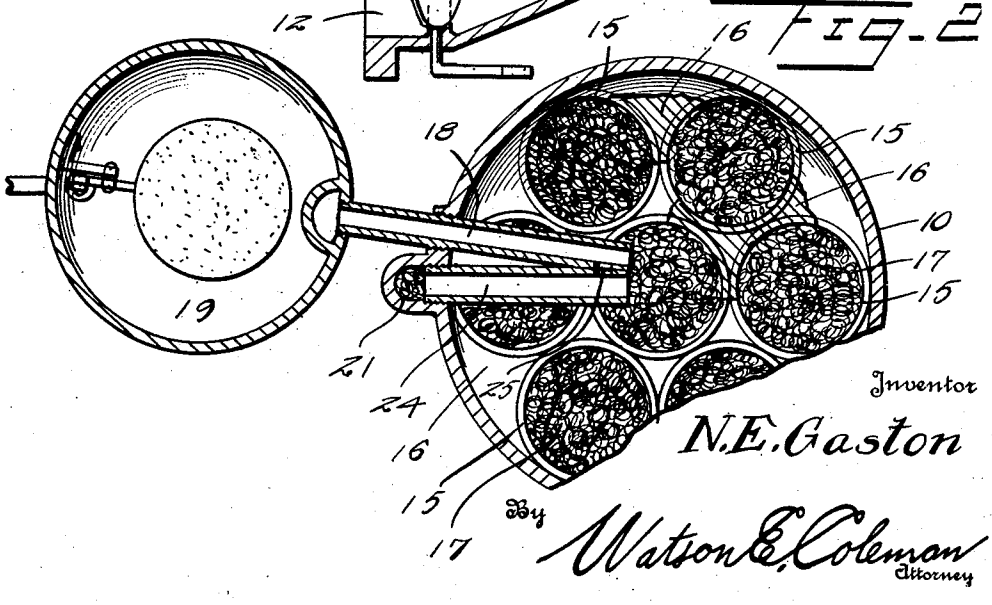


Fig. 2



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CARBURETOR

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This invention relates to carburetors and has for an important object thereof the provision of a carburetor, wherein atomization of a liquid fuel is carried to a point where the substance is so finely divided as to produce substantially a gas.

A further and more specific object of the invention is to provide means for use in a carburetor and with which the fuel engages after its atomization at the usual fuel nozzle whereby the fuel is more finely divided and more intimately mingled with the air supply.

A further and still more specific object of the invention is the provision in a carburetor of passages through which the atomized fuel and air must move having arranged therein a non-corrosive shredded filling which acts to thoroughly intermingle the air and particles of fuel and to further reduce the particles of fuel in size as respects the ordinary result obtained by an atomized nozzle.

A still further object of the invention is to provide means for producing the same effect in the charge by-passed around the throttle during idling operations.

These and other objects I attain by the construction shown in the accompanying drawing, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is a vertical sectional view through a carburetor constructed in accordance with my invention;

Figure 2 is a horizontal sectional view therethrough.

Referring now more particularly to the drawing, the numeral 10 designates a chamber which may be of any desired form and which has an air inlet 11, a fuel mixture outlet 12 and choke and throttle valves arranged in said inlet and outlet which are preferably of the butterfly type, as indicated at 13 and 14. The throttle valve 14 is located at the inner end of the outlet, for a purpose presently to appear. The chamber embodies, adjacent its outlet end, means producing a plurality of tubes 15. In the present instance, this means is provided by actually employing tubes, the walls of which are sealed to one another and to the wall of the chamber, by a plate 16. The plate 16 is arranged within the chamber 10 and has its edge secured to the wall of the chamber. The plate 16 is provided with openings for the reception of the tubes 15, and the walls of the openings are secured to the tubes. Each tube 15 has arranged therein a non-corrosive shredded filling 17, which may conveniently comprise a form of mineral wool. This filling may be held in position in the tubes in any suitable manner, being at present illustrated as frictionally maintained in position therein. Other means for accomplishing this result may obviously be employed, if desired. That portion of the chamber 10 located below the tubes 15 constitutes an outlet chamber, and the valve 14 when closed divides this chamber into an inner and an outer portion.

Between the inlet 11 and the adjacent ends of the tubes 15, a jet nozzle 18 supplied from a convenient source, such as a float chamber 19, projects into the chamber and preferably has its open terminus located adjacent the longitudinal axis of the chamber. The supply to this nozzle may be controlled in any convenient manner, the float chamber being at present indicated as provided with a needle valve 20 controlling the supply thereto. Formed in the wall of the chamber is a longitudinally extending passage 21, one end of which opens into the outlet 12 outwardly of the throttle valve 14 and the opposite end of which is closed, with the exception of a small opening 22 controlled by a needle valve 23. A tube 24 communicates with this passage adjacent its upper end and the outer end of this tube is open. The side walls of the tube 24 and nozzle 18 merge and a small opening is formed therethrough, placing the bore of the nozzle in communication with the interior of the tube, as indicated at 25. Within the passage 21, a wadding of non-corrosive shredded material, such as that employed in the tubes 15, is arranged.

In ordinary operation of a carburetor of this character, the incoming air is mingled with the supply of fuel at the nozzle 18 and in passing through the tubes 15, the fuel is thoroughly broken up by contact with the

shredded wadding, so that its entire surface is exposed for contact with the air and as a result, a very intimately mixed fuel is produced. When the throttle valve 14 is closed or nearly closed as in idling, air will be drawn through the tube 24 and passage 21 and in moving through the tube, will have added thereto particles of fuel received through the port 25. Additional air may be admitted through the port 22, as desired, to control the idling operation, and this air will be thoroughly intermingled with the primary air and fuel during passage through the wadding.

It will be obvious that while the wadding material has been illustrated as disposed in a plurality of tubes, this construction is merely adopted for convenience and that, if desired, a single tube or the bore of the chamber could be employed to support this material.

It will also be obvious that a structure such as illustrated is capable of a certain range of change and modification without materially departing from the spirit of the invention and I accordingly do not limit myself thereto except as hereinafter claimed.

I claim:—

1. In a carburetor, a walled chamber having an air inlet and a fuel mixture outlet, a plurality of tubes vertically disposed in the chamber between the inlet and outlet, means sealing the spaces between the tubes and between the tubes and the walls of the chamber, an atomizer nozzle between the inlet and the adjacent ends of the tubes, a non-corrosive shredded filling for said tubes, a valve in said chamber beyond the inlet from said atomizer nozzle and controlling the flow of air through said tubes, a passage by-passing the valve and communicating with the chamber between the inlet and valve, and means for transferring fluid from the atomizer nozzle to said passage operative upon the movement of air through said passage.

2. In a carburetor, a walled chamber having an air inlet and a fuel mixture outlet, a plurality of tubes vertically disposed in the chamber between the inlet and outlet, means sealing the spaces between the tubes and between the tubes and the walls of the chamber, an atomizer nozzle between the inlet and the adjacent ends of the tubes, a non-corrosive shredded filling for said tubes, a valve in said chamber beyond the inlet from said atomizer nozzle and controlling the flow of air through said tubes, a passage by-passing the valve and communicating with the chamber between the inlet and valve, means for transferring fluid from the atomizer nozzle to said passage operative upon the movement of air through said passage, and means operable from the exterior of the chamber for admitting additional air to said passage.

3. In a carburetor, a walled chamber having an air inlet and a fuel mixture outlet, a plurality of tubes vertically disposed in the chamber between the inlet and outlet, means sealing the spaces between the tubes and between the tubes and the walls of the chamber, an atomizer nozzle between the inlet and the adjacent ends of the tubes, a non-corrosive shredded filling for said tubes, a valve in said chamber beyond the inlet from said atomizer nozzle and controlling the flow of air through said tubes, a passage by-passing the valve and communicating with the chamber between the inlet and valve, means for transferring fluid from the atomizer nozzle to said passage operative upon the movement of air through said passage, and means operable from the exterior of the chamber for admitting additional air to said passage, the passage having a non-corrosive shredded filling therein.

4. In a carburetor, a walled chamber having an air inlet and a fuel mixture outlet chamber, a plurality of tubes vertically disposed in the chamber between the inlet and the outlet chamber, means sealing the spaces between the tubes and between the tubes and the walls of the chamber, an atomizer nozzle between the inlet and the adjacent ends of the tubes, a non-corrosive shredded filling for said tubes, a valve adapted when closed to divide said outlet chamber into inner and outer portions and controlling the flow of air through said tubes, a passage communicating with the chamber between the inlet and the adjacent ends of the tubes and with the outer portion of said outlet chamber, a non-corrosive shredded filling for said passage, and means for introducing a liquid fuel to said passage.

5. In a carburetor, a walled chamber having an air inlet and a fuel mixture outlet chamber, a plurality of tubes vertically disposed in the chamber between the inlet and the outlet chamber, means sealing the spaces between the tubes and between the tubes and the walls of the chamber, an atomizer nozzle between the inlet and the adjacent ends of the tubes, a non-corrosive shredded filling for said tubes, a valve adapted when closed to divide said outlet chamber into inner and outer portions and controlling the flow of air through said tubes, a passage communicating with the chamber between the inlet and the adjacent ends of the tubes and with the outer portion of the outlet chamber, a non-corrosive shredded filling for said passage and a port connecting the atomizer nozzle and said passage.

6. In a carburetor, a walled chamber having an air inlet and a fuel mixture outlet chamber, a plurality of tubes vertically disposed in the chamber between the inlet and the outlet chamber, means sealing the spaces between the tubes and between the tubes and the walls of the chamber, an atomizer nozzle between the inlet and the adjacent ends of

the tubes, a non-corrosive shredded filling for said tubes, a valve adapted when closed to divide said outlet chamber into inner and outer portions and controlling the flow of air through said tubes, a passage communicating with the chamber between the inlet and the adjacent ends of the tubes and with the outer portion of the outlet chamber, a non-corrosive shredded filling for said passage, a port connecting the atomizer nozzle and said passage, and means for admitting additional air to said passage controllable from the exterior of the chamber.

In testimony whereof I hereunto affix my signature.

NATHAN E. GASTON.