Aug. 13, 1929. J. M. LOSACK 1,724,097

CHARGE FORMER FOR INTERNAL COMBUSTION ENGINES

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Fig. 1

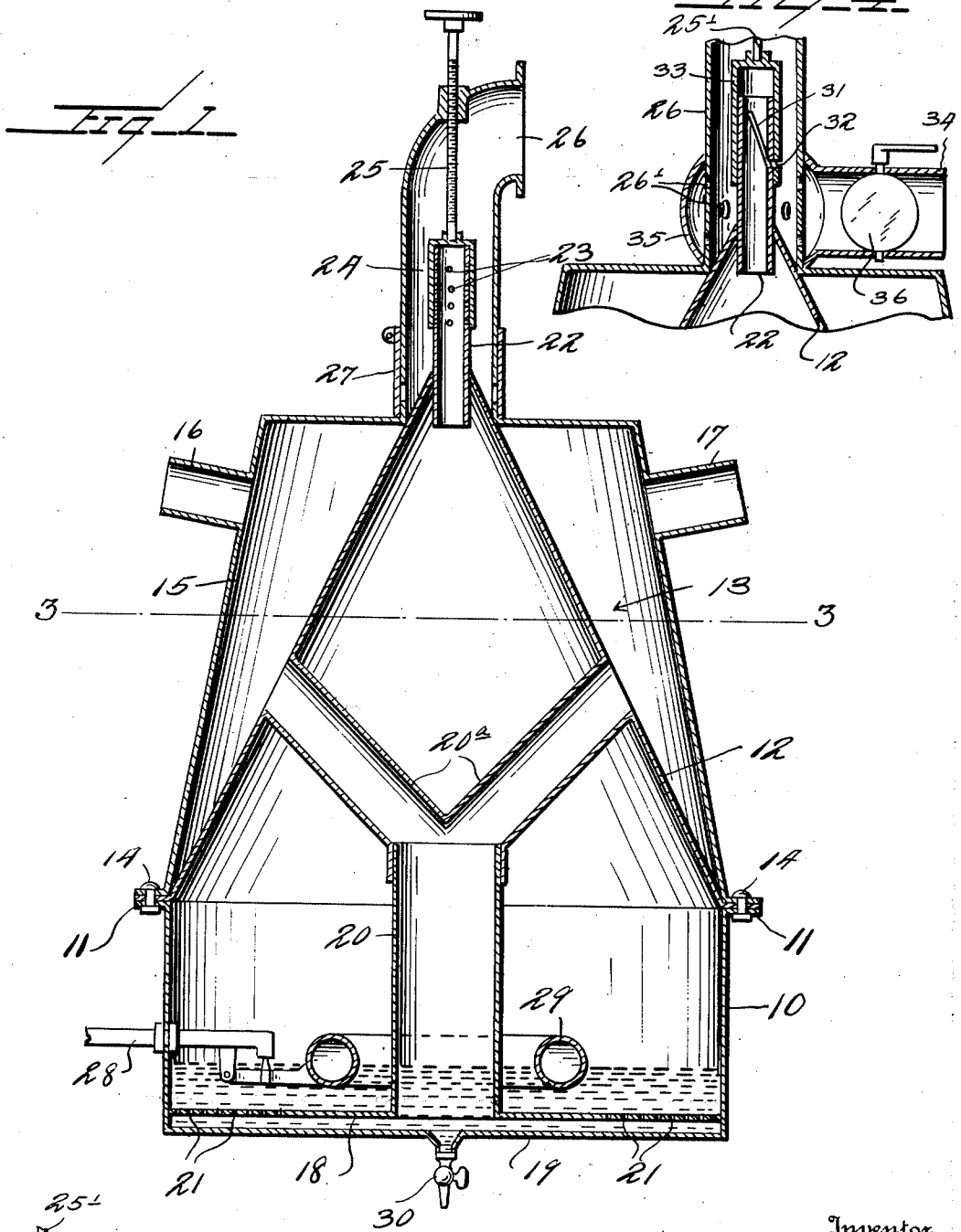
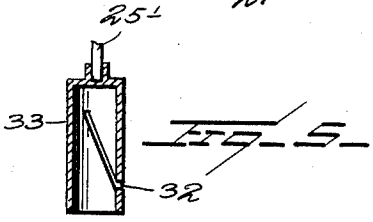


Fig. 4

Fig. 5



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Fig. 2

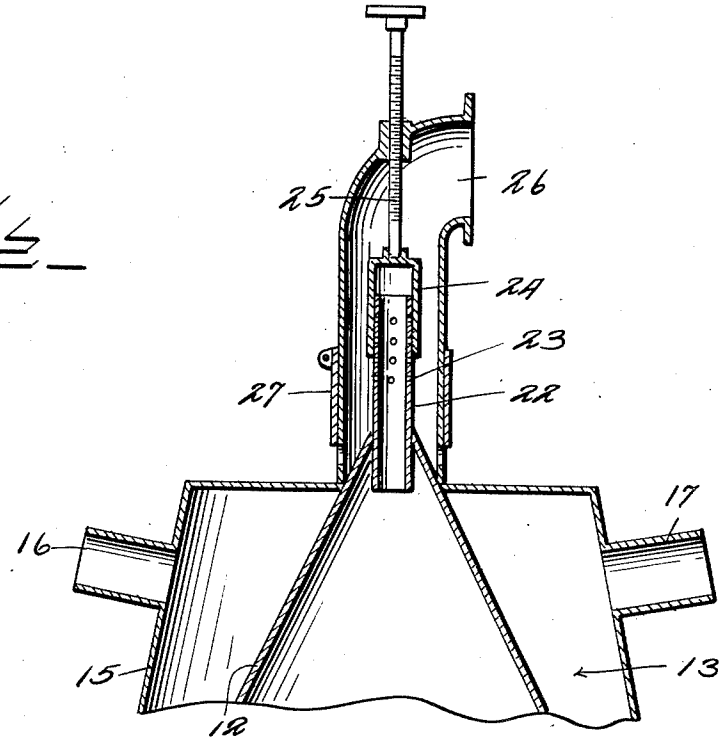
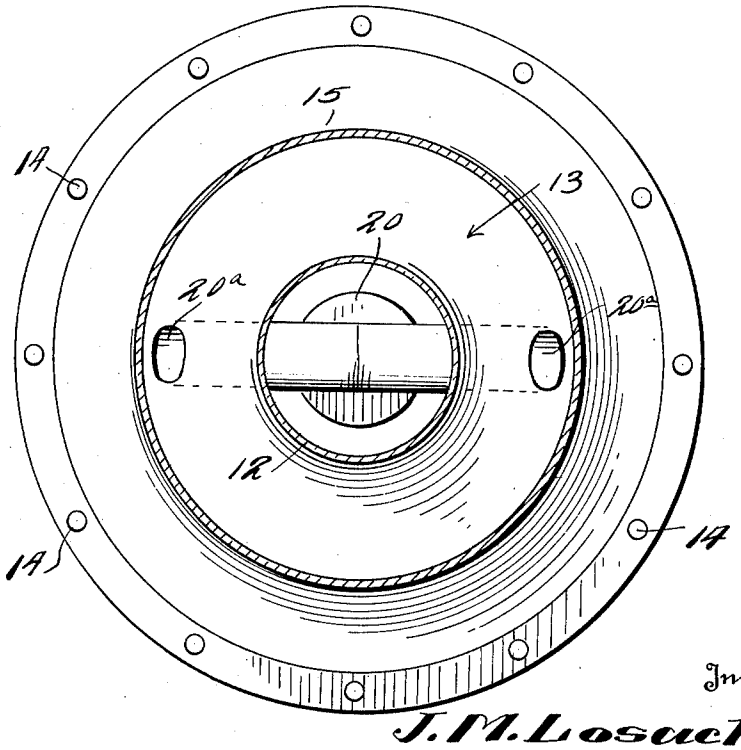


Fig. 3



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UNITED STATES PATENT OFFICE.

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CHARGE FORMER FOR INTERNAL-COMBUSTION ENGINES.

Application filed September 13, 1927. Serial No. 219,292.

This invention relates to carbureters, and the general object of the invention is to provide a carbureter of such construction that the liquid fuel is atomized by the introduction of exhaust into the liquid fuel chamber, this atomized fuel being then drawn into a mixing chamber where it is mixed with air and carried to the intake manifold of the engine.

A further object is to provide a device of this character which has been found to be very effective, which is simple in construction, and which does away with the use of interior jets which are likely to choke up.

A still further object is to provide a carbureter of this character which will absolutely prevent the introduction of raw gas into the cylinder of the engine and which will permit the engine to run longer on a gallon of gas than other carbureters known to me.

My invention is illustrated in the accompanying drawings, wherein:

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

Figure 2 is a fragmentary section on the same line as Figure 1, showing the valve partially open;

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

Figure 4 is a vertical sectional view of a modified form of the carbureter;

Figure 5 is a sectional view of a modified form of sleeve cap used in the carbureter.

Referring to these drawings, 10 designates the bottom section of a gasoline or fuel chamber. This is flanged at its upper end, as at 11. Attached to these flanges as, for instance, by bolts is a conical top 12 which forms the inner wall of an exhaust chamber 13. This exhaust chamber is also flanged at its lower end, fits down over the top 12, and is bolted to the flange 11 by the bolts 14 which pass through the three flanges of the bottom 10, the top 12, and the outer wall 15 of this exhaust chamber. The outer wall of the exhaust chamber is provided with an exhaust inlet 16 and an exhaust outlet 17 disposed adjacent the top of the exhaust chamber.

Disposed adjacent the bottom 19 of the section 10 is a false bottom 18 which is annular in form and has an upwardly extending, centrally disposed duct or pipe 20 which has branches 20^a extending divergently to the wall 12 and opening through this wall. The false bottom around its outer margin is formed with a plurality of fine perforations 21 and the exhaust from the exhaust chamber 13 is drawn downward through the branches 20^a and the central pipe 20 and passes between the bottom 19 and the false bottom 18 and up through the perforations 21 and through the fluid gasoline or other fuel which is disposed upon the bottom 19.

The upper end of the wall 12 supports a tubular mixing nozzle 22 which extends down below the apex of the wall 12 and extends above this apex and is provided with perforations 23. Operating over the upper end of this mixing nozzle 22 is a sleeve-like cap 24 constituting a valve which is closed at its upper end and which is of such length that when it is lowered it completely covers all of the perforations 23. This cap may be raised to any desired degree by the adjustment screw or rod 25 which extends up through an opening in the outlet pipe 26. This outlet pipe at its lower end fits down upon the apex of the wall 12 at its junction with the top of the exhaust chamber 13 and is provided with perforations or openings at its lower end through which air may enter the lower end of the outlet pipe and pass upward around the mixing nozzle. A sleeve valve 27 is disposed around the base portion of the outlet pipe and may be raised or lowered by any suitable means so as to allow a greater or less amount of air to pass into the interior of the pipe 26.

A fuel inlet pipe 28 extends into the side of the fuel chamber 10 and outlet through this pipe into the fuel chamber is controlled by a needle valve operated by the annular float 29. As this float rises, the inlet of fuel to the fuel chamber is stopped and when the level of the fuel falls the float will fall, permitting the inlet of fuel to the chamber. A drain cock 30 is provided in the bottom of section 10.

The operation of this carbureter will be obvious from what has gone before. Upon the suction stroke of the engine, the gas or vapor accumulated in the upper portion of the fuel chamber is carried out through the nozzle 22 and into the outlet pipe. This suction, and the pressure of the exhaust gas itself, causes a certain portion of the exhaust gases to be drawn downward through the ducts 20^a, the pipe 20 and upwardly

through the perforations 21 and upward through the layer of liquid fuel which has collected at the bottom of the fuel chamber. This causes the atomizing of the gasoline or other fuel and this fine vapor or pure gasoline and the gases from the exhaust are drawn upward and discharged through the nozzle 22 in an amount controlled by the adjustment of the valve or cap 24. The exhaust vapor by its heat acts to atomize and vaporize the gasoline. By controlling the valve 27, the amount of air which is to be mixed with the fuel may be controlled.

In the use of this carbureter or gas former, the exhaust gases being forced upward through the liquid gasoline or other fuel causes the liquid fuel to foam. The foam strikes against the conical wall 12 and this causes a quick vaporization of the gasoline or fuel, which causes the engine to start quickly. As soon as the engine has heated this top or wall 12, the foam drops to within one inch above the false bottom 19 or higher at higher speeds. It will be noted that practically the whole top of the fuel chamber, which top is formed by the wall or member 12, is heated by the exhaust so that any gasoline splashed against this conical wall will be vaporized and at the same time the interior of the fuel chamber is heated by the central pipe 20 and the divergent branches 20^a so that the gasoline is maintained in the best possible condition for vaporization. All of the vapor is drawn upward against this conical wall 12 and forced inward to pass through the nozzle 22 with the least possible effort.

One of the advantages of this gas making or carbureting mechanism is that it does not allow raw gas to pass into the cylinder but pure carbureted air. There are no inside jets which are liable to clog or choke up and actual practice has shown that greater mileage is secured with this carbureter than is possible with other carbureters known to me. It will be understood that only a certain relatively small amount of the exhaust gases pass upward through the liquid gasoline or other fuel.

The device is very simple, may be easily taken apart for cleaning, and it has no delicate parts which require more or less constant adjustment. I do not wish to be limited to the use of the cap-like valve 24, as obviously other means might be provided for controlling the amount of gas or vapor allowed to flow into the air current passing upward through the outlet pipe 26.

In the form of the invention as shown in Figures 4 and 5 of the drawing, the mixing nozzle 22 is provided with a spirally disposed slot 31 which is adapted to register with a similar slot 32 provided in a sleeve 33 mounted upon the said nozzle. A stem 25′ is connected with the said sleeve and may be used for turning or moving the sleeve upon the nozzle. Any movement of the sleeve upon the nozzle will increase or diminish the portage through the slots 31 and 32. The pipe 26 is provided with openings 26′ and a pipe 34 is provided with an enlarged head 35 which surrounds the pipe 26 and the openings 26′ therein. A butterfly valve 36 is mounted in the pipe 34 in a usual manner.

I claim:—

1. A carbureter and gas former comprising a fuel chamber having a conical top, the fuel chamber being formed with a false bottom perforated adjacent its margins and spaced from the bottom of the chamber, an exhaust chamber surrounding the conical top of the fuel chamber and having an exhaust inlet and an exhaust outlet pipe, a central pipe extending upward from an opening in the false bottom and having branches extending through the top of the fuel chamber into said exhaust chamber, means within the fuel chamber for maintaining liquid at a predetermined level therein, a discharge nozzle at the upper end of the fuel chamber, an outlet pipe surrounding said nozzle and into which the nozzle discharges, adjustable means for controlling the discharge from said nozzle into the pipe, and adjustable means for permitting air to enter the pipe below the outlet of said nozzle.

2. A carbureter and gas former of the character described comprising a fuel chamber formed of a lower section and an upper conical section attached to the lower section, a false bottom disposed within the fuel chamber and perforated, an exhaust chamber disposed exteriorly to said conical top and enclosing substantially all of the conical top, the exhaust chamber having an exhaust inlet and an exhaust outlet, a central pipe leading upward from below the false bottom and having branches extending through the top and opening into the exhaust chamber, a nozzle extending upward from the apex of the conical top and formed with an aperture, a manually adjustable valve shiftable to control the amount of vapor passing through said aperture, an outlet pipe adapted to lead to the engine and surrounding said nozzle and extending downward to the top of the exhaust chamber and having air inlets, a valve surrounding said pipe and shiftable to admit a greater or less amount of air into said pipe through said nozzles, and a float valve in the lower end of the fuel chamber for controlling the amount of liquid fuel admitted to said chamber.

3. As a charge former for internal combustion engines, a vaporizing chamber having a false perforated bottom and having an outlet nozzle in its top, float controlled means for admitting liquid fuel to the bot-

tom of said chamber, an exhaust chamber partially surrounding said fuel and vaporizing chamber and having an exhaust inlet and an exhaust outlet, means for admitting a portion of the exhaust from said exhaust chamber into the space beneath the false bottom of the fuel and vaporizing chamber, an outlet pipe surrounding said nozzle and adapted to be connected to the engine and having air inlets adjacent the top of the exhaust chamber, means for controlling the amount of air entering through said inlets, and means for controlling the amount of vapor passing from said nozzle into said pipe.

In testimony whereof I hereunto affix my signature.

JOHN M. LOSACK.