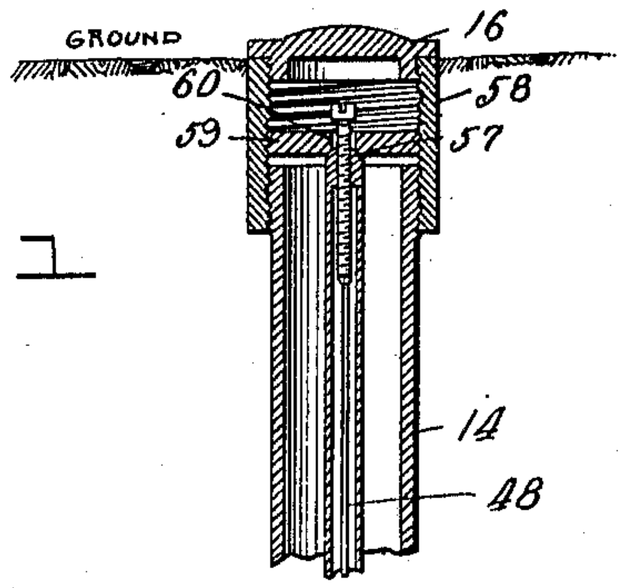
C. M. KEMP.

CARBURETER.

APPLICATION FILED SEPT. 7, 1910.

989,981. Patented Apr. 18, 1911.

Fig 1



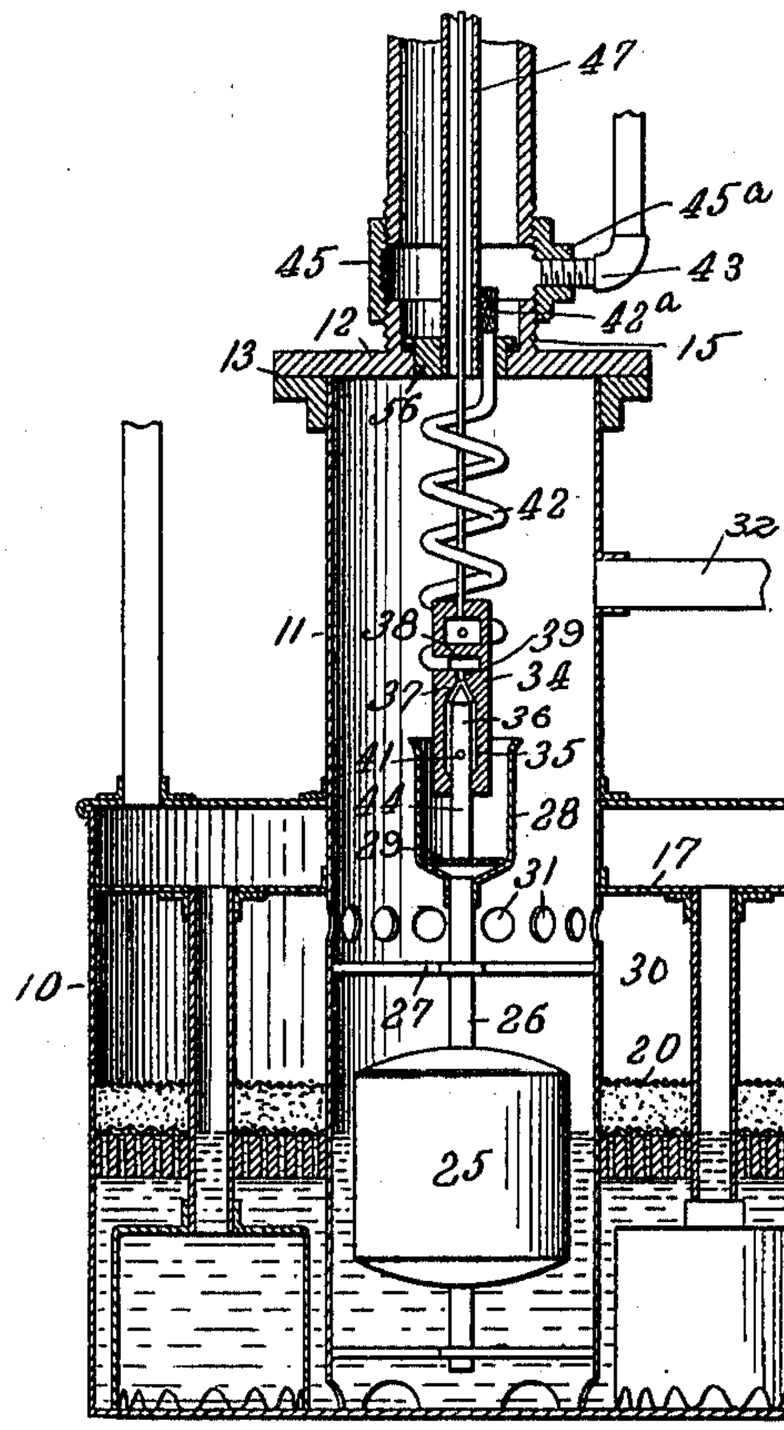
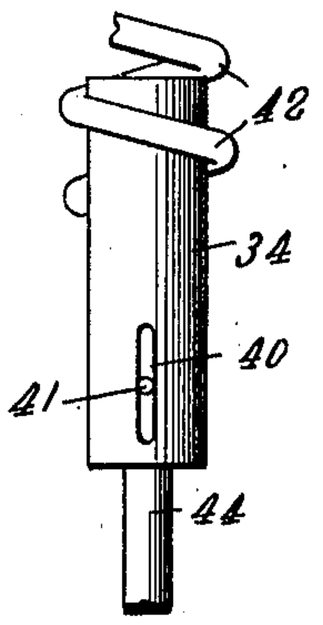


Fig 2



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UNITED STATES PATENT OFFICE.

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CARBURETER.

989,981. Specification of Letters Patent. **Patented Apr. 18, 1911.**

Original application filed June 8, 1910, Serial No. 565,754. Divided and this application filed September 7, 1910. Serial No. 580,931.

To all whom it may concern:

Be it known that I, CLARENCE M. KEMP, a citizen of the United States, residing at Baltimore, State of Maryland, have invented new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to an apparatus for carbureting air and is designed to be used in connection with an apparatus of sufficient size to manufacture gas for the purpose of illuminating and heating a building or a number of buildings, although it may be applied on an apparatus of smaller capacity.

The main object of the invention, which is a division of my application filed on the 8th day of June, 1910, and bearing Serial No. 565,754, relates to a device for maintaining a constant level of hydrocarbon fluid in the carbureting tank, and one so sensitive that a very slight lowering of the fluid level causes the inlet valve for said fluid to open and admit a sufficient quantity of hydrocarbon into the tank to compensate for that lost through volatilization and absorption by the air forced into the apparatus.

By means of this device a practically constant quantity of hydrocarbon fluid at a predetermined level, which may be changed, is always maintained in the tank and the gas produced in the apparatus is at all times of the same quality owing to the fact that the air to be carbureted passes through the same volume or "thickness" of hydrocarbon fluid. If the fluid level be permitted to vary to any extent, the gas produced would be unequal in quality, a low fluid level causing poor gas owing to the small amount of hydrocarbon through which the air passes, while with a high level a richer gas results. It will be seen, therefore, that with a substantially unvarying fluid level, better and more certain results are obtained.

With this object in view the invention consists of the novel construction, combination and arrangement of parts hereinafter described and claimed and illustrated in the accompanying drawings in which:—

Figure 1 is a vertical sectional view of a carbureting apparatus with the invention applied thereto, and Fig. 2 a view of the hydrocarbon valve chamber enlarged.

In the drawings, the numeral 10 indicates a tank within which air is carbureted and from the bottom of which a preferably cylindrical chamber 11 extends vertically through and above the tank for a suitable distance. A cap plate 12 covers the upper end of the chamber and is attached thereto in any desired manner, as by a flanged ring 13. The tank is usually buried in the ground at any required depth and is connected with the surface of the ground by a casing 14, which serves as a hydrocarbon fluid container attached to a threaded flange on the upper surface of the cap plate 12. At the surface of the ground the casing 14 is provided with a closure 16 of any suitable kind, a screw cap being shown as an example.

Within the tank, a short distance below the top and surrounding the chamber 11 is an air tight diaphragm 17. Midway between said diaphragm and the bottom of the tank is a foraminous partition 20 dividing the tank into a lower hydrocarbon fluid or gasolene receptacle, and an upper gas chamber 30 communicating with the chamber 11 through holes 31 in the wall of the latter chamber.

The normal level of the hydrocarbon fluid in the tank 10 is midway between the top and bottom of the foraminous partition 20 and is retained at this height by means of a float 25 in the chamber 11 mounted on a tubular stem 26 passing through said float and vertically movable in bearings 27. The upper end of the tubular stem 26 carries a cup 28 open at the top and provided with a strainer 29 at the bottom to prevent foreign matters passing into the tubular stem.

An inlet valve 34 is supported, as hereinafter described over the cup 28 and projects normally a short distance within the same. Within the valve casing is a chamber 35, its upper end forming a seat 37 for a valve 36 slidable by gravity within said chamber and prevented from slipping out by a cross pin 41 projecting from the valve stem 44 and into a slot 40 in the valve casing which valve stem rests on the bottom of the cup 28 or the screen therein. The inlet valve is to be understood as comprising the valve casing containing the chamber 35, valve seat 37, and a small reservoir 38; the valve proper 36 and the valve stem 44. A duct 39 connects the valve chamber 35 at the valve seat with a small reservoir 38 slightly above said valve seat. The reservoir 38 is kept filled with hydrocarbon fluid by a flexible pipe 42, one end of which en-

ters the small reservoir and its other end terminates within the hydrocarbon fluid container 14 and its connections, and is covered by a reticulated metal or wire gauze cap 42ª. The flexible pipe 42 is here shown in the form of a coil to permit vertical movement of the inlet valve, but it may be of any equivalent construction.

Screwed on the threaded flange 15 projecting upwardly from the cover plate 12 is a T coupling 45, the opposite branch of which receives the lower end of the casing 14, while into the third and smaller branch 45ª is screwed a pipe 43 for feeding the hydrocarbon fluid into the container 14 from a holding tank preferably buried in the ground, as is also the carbureter.

A vertical tube 47 extends through the casing 14 and is fastened at its lower end to a plug 56 fitted in an opening in the cover plate 12 from which projects a side flange resting on said plate to hold the plug in position and through which the upper end of the pipe coil 42 passes. The upper end of the tube 47 extends to the top of the casing 14 and is closed except for a threaded opening to receive a vertical screw or bolt 57 attached at its lower end to a rod 48 extending downward to the inlet valve 34 and fastened to the upper end of said inlet valve to support the same. If desired, the rod 48 and the screw 57 may be made integral. Now, if the screw 57 be turned in one direction, it will lower the inlet valve and depress the float to cause a lowering of the fluid level in the tank 10. A reverse turning of the screw raises the inlet valve, whereupon the float will be able to rise higher before closing the valve and thus permit a greater elevation of the fluid level.

A straight coupling 58 is screwed partway on the upper end of the casing 14, and into its upper end is screwed the flange of the cap 16. Between the cap flange and the top of the casing 14 is a disk 59 threaded in the coupling 58 and provided with an opening 60 through which the screw 57 easily passes, the opening being chamfered or countersunk on the underside of the disk to form a seat for the upper end of the tube 47 shaped to fit the chamfer or countersink. When the disk is turned in the proper direction, it presses the plug 56, through the tube 47, firmly in its seat in the cover plate to prevent the escape of hydrocarbon through said seat, or the leakage outwardly of gas within the chamber 11.

The level of the gasolene gradually falls during the manufacture of gas and the float 25 descends, thus causing the inlet valve to open. Gasolene in the casing 14 descends through the pipe coil 42 into the small reservoir 38 in the valve casing, through the duct 39 and past the valve 36 to the cup 28. From the cup, the gasolene flows through the tubular stem to the bottom of the tank 10. As the tank gradually fills, the float rises and closes the inlet valve when the normal fluid level in the tank is reached. When the gas is formed it passes into the central section 30 of the tank 10, thence through the openings 31 in the chamber 11 and emerges therefrom through the supply pipe 32 to the various points of distribution in a building.

What I claim is:

1. In a carbureter, a tank adapted to contain a predetermined quantity of hydrocarbon fluid, a hydrocarbon fluid container, an inlet valve, a float in said tank arranged to operate the inlet valve for regulating the flow of hydrocarbon fluid into said tank, and a flexible pipe connected to the casing of said inlet valve and to the container.

2. In a carbureter, a tank, a float for maintaining a predetermined quantity of hydrocarbon therein, a hydrocarbon inlet valve operated by said float, a rod connected to the hydrocarbon inlet valve and passing upward to the outside of the tank, means for moving said rod upward or downward, a hydrocarbon fluid container, and a flexible tubular connection for hydrocarbon fluid between said inlet valve and the hydrocarbon fluid container.

3. In a carbureter, a tank adapted to contain a predetermined quantity of hydrocarbon fluid, a chamber extending vertically through the tank and above the same, a closure for said chamber having an opening therethrough, a plug in said opening, a float in said chamber, a hollow stem attached to said float, a cup on the upper end of said stem and opening into it, an inlet valve including a valve stem said valve stem being supported on the bottom of said cup and movable with said cup, and a pipe coil supported by said plug and opening at its lower end into the inlet valve for conveying hydrocarbon fluid to said valve.

4. In a carbureter, a tank, a float for maintaining a predetermined quantity of hydrocarbon fluid therein, an inlet valve actuated by the movement of the float, adjustable means acting through the inlet valve for limiting the rise of the float and consequently the height of fluid in said tank, a hydrocarbon fluid container, and a pipe coil connected at one end to said valve casing and opening at its other end into said hydrocarbon fluid container.

5. In a carbureter, a tank, a float for regulating the height of hydrocarbon fluid in said tank, an inlet valve, means connected to the inlet valve for raising and lowering the same, the parts being so arranged that the position of the inlet valve limits the upward movement of the float and the fluid level in the tank, while the movement of the float opens and closes the inlet valve, a hydro-

carbon fluid container, and a flexible pipe coil leading therefrom to said inlet valve.

6. In a carbureter, a tank, a float, a hollow float stem extending nearly to the bottom of said tank and having a cup-shaped upper end, an adjustable inlet valve adapted to be opened and closed by the movement of said float and to limit the upward movement of the same, means connected to the inlet valve for raising and lowering the same whereby the fluid level through the intermediary of the float is varied, a fluid container, and a flexible pipe connection from said container to the inlet valve.

7. In a carbureter, a tank, means for regulating the height of fluid therein comprising a float, a vertically movable inlet valve including a casing, a valve therein, and a valve stem in contact with said float and movable therewith to open and close the valve, a coiled pipe through which fluid is fed to the valve, and a vertical rod attached to said valve casing, said rod being provided with means for raising and lowering said inlet valve whereby the position of the float is changed and the level of the fluid in said tank is raised and lowered.

8. In a carbureter, a tank, means for regulating the height of fluid therein comprising a float, a hollow float stem having a cup shaped upper end, a vertically movable inlet valve including a casing, a valve in said casing, and a valve stem in contact with said float stem and movable therewith to open and close the valve, a coiled pipe through which fluid is fed to the valve, and a vertical rod attached to said valve casing, said rod being provided with means for raising and lowering said inlet valve whereby the position of the float is changed and the level of the fluid in said tank is raised and lowered.

9. In a carbureter, a closed tank for containing a fluid, a casing above said tank, and adapted to serve as a fluid container, a plug fitting tightly in an opening in the bottom of said casing, a vertical tube attached to said plug and extending to the top of said casing, and means within said casing for pressing the tube downward to hold the plug in place.

10. In a carbureter, a closed tank for containing a fluid, a vertical chamber in said tank extending from the bottom thereof through the top for a suitable distance and closed by a cover plate, a casing attached to said cover plate and adapted to serve as a fluid container, a plug fitting tightly in an opening in the bottom of said casing, a vertical tube attached to the said plug and extending to the top of said casing, and means within said casing for pressing the tube downward to hold said plug in place.

11. In a carbureter, a closed tank for containing a fluid, a casing above said tank and adapted to serve as a fluid container, said tank having an opening formed therein, a plug fitting tightly in said opening, a vertical tube attached to said plug and extending to the top of said casing, means within said casing for pressing the tube downward to hold said plug in place, a float in said tank, a fluid inlet valve opened and closed by the movement of the float to admit fluid into said tank, a pipe connecting said valve with the casing, and a rod attached to the inlet valve and extending through the vertical tube.

12. In a carbureter, a closed tank for containing a fluid, a vertical chamber in said tank extending from the bottom thereof through the top for a suitable distance and closed by a cover plate, a casing attached to said cover plate and adapted to serve as a fluid container, said cover plate having an opening formed therethrough, a plug fitting tightly in said opening, a vertical tube attached to said plug and extending to the top of said casing, a means within said casing for pressing the tube downward to hold said plug in place, a float in said tank, a tubular stem attached to said float and having a cup shaped upper end, a fluid inlet valve opened and closed by the movement of the float to admit fluid into said tank, a pipe coil connecting said valve with the container, and a supporting rod attached to the inlet valve and extending through said vertical tube.

13. In a carbureter, a tank, a float for maintaining a predetermined quantity of hydrocarbon fluid therein, a hollow stem attached to said float extending nearly to the bottom of said tank and having a cup shaped enlargement on its upper end, an inlet valve comprising a valve casing and a valve slidable in said casing and bearing on the bottom of said enlargement, an adjustable rod connected to said casing extending upwardly and adapted to be moved longitudinally to change the position of the inlet valve thereby limiting the rise of the float and consequently the height of fluid in the tank, a hydrocarbon fluid container, and a pipe coil connected at one end to said valve casing and opening at its other end into the hydrocarbon fluid container.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CLARENCE M. KEMP.

Witnesses:
WILLIAM T. HALL,
M. YOUNG.