C. M. KEMP.

CARBURETER.

APPLICATION FILED SEPT. 7, 1910.

990,143. Patented Apr. 18, 1911.

Fig 1

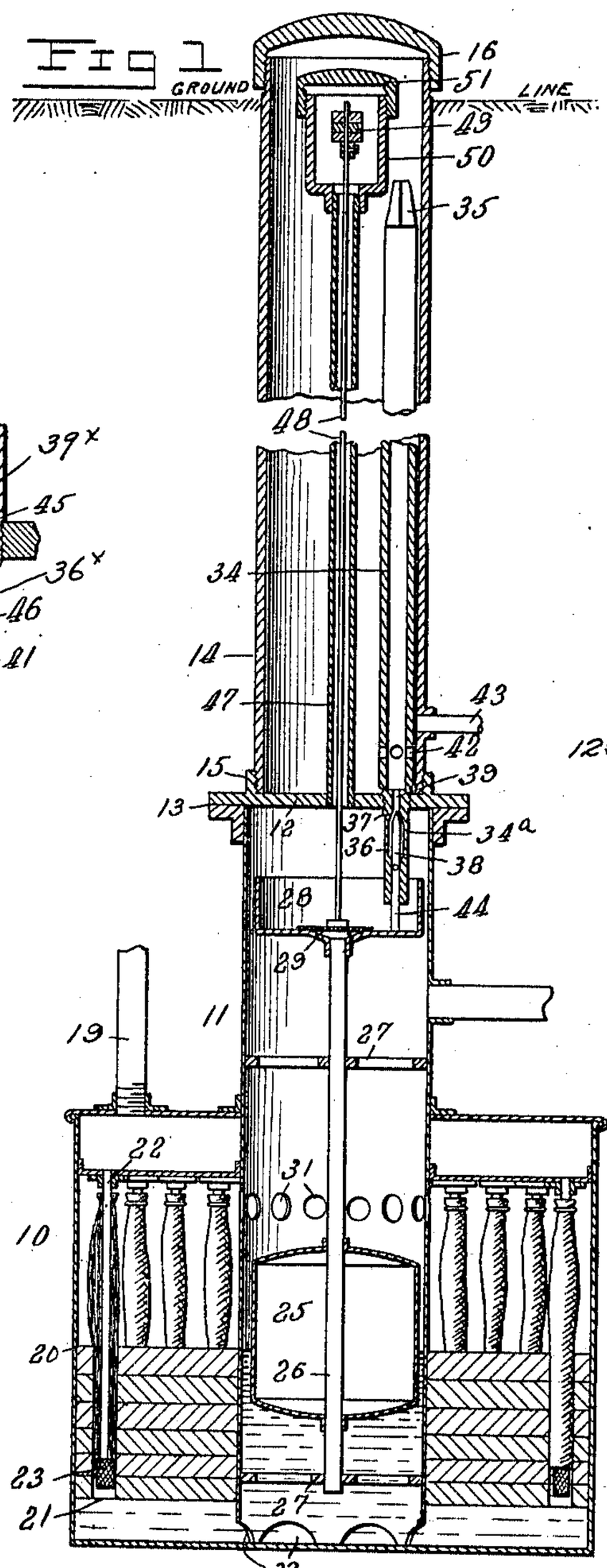


Fig 2

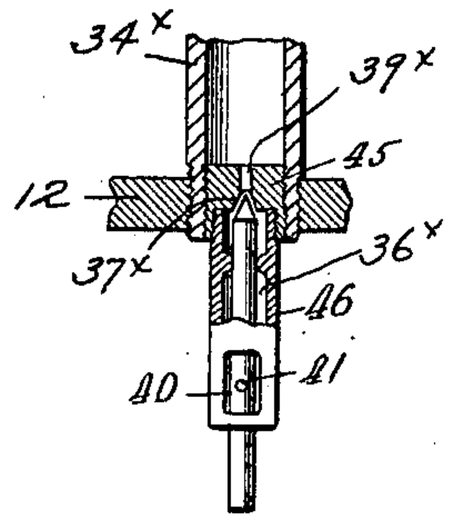
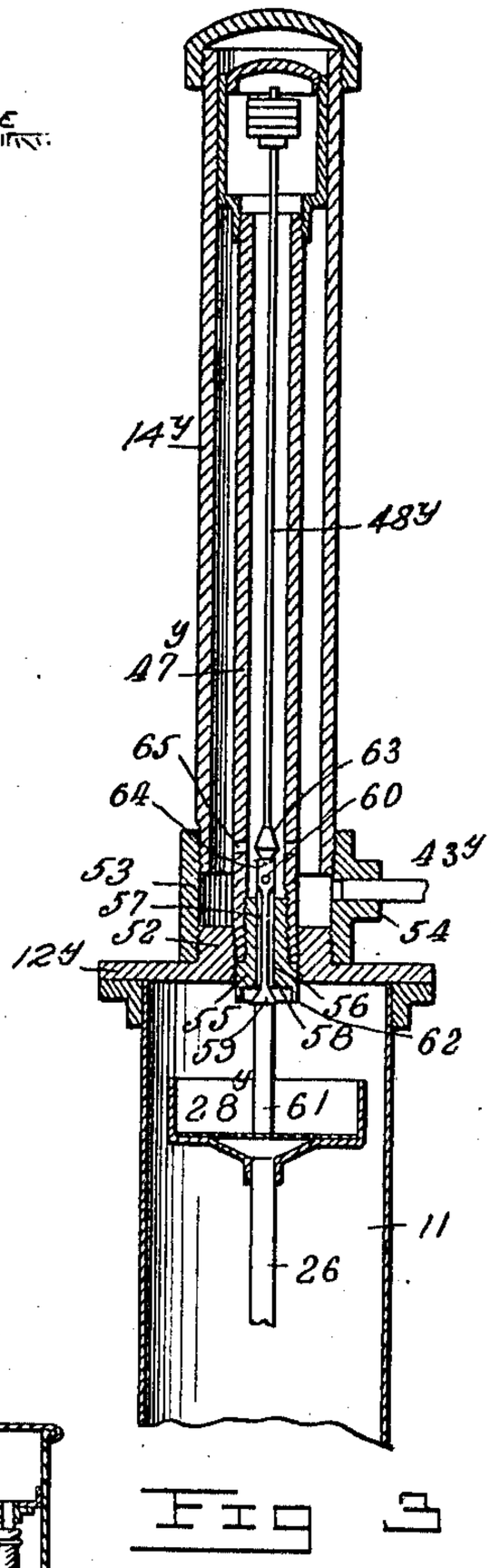


Fig 3



Witnesses

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UNITED STATES PATENT OFFICE.

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CARBURETER.

990,143. Specification of Letters Patent. Patented Apr. 18, 1911.

Original application filed June 8, 1910, Serial No. 565,753. Divided and this application filed September 7, 1910. Serial No. 580,930.

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, more especially to that class of machines for manufacturing gas in sufficiently large quantities to illuminate and heat individual buildings or a group of buildings.

The object of this invention which is a division of my application filed on the 8th day of June, 1910, and bearing Serial No. 565,753, is directed to the means for automatically retaining a constant level of hydrocarbon fluid in the carbureting tank, comprising a very sensitive device operated by the variation of fluid level in said tank so that a slight consumption of gas and the absorption of a relatively small quantity of hydrocarbon by the incoming air will actuate a float in the tank and open the hydrocarbon inlet valve to admit a sufficient quantity of hydrocarbon to restore the fluid level. By thus maintaining a constant quantity of hydrocarbon in the tank, a gas of more uniform quality is produced than would be the case if the fluid level changed to a considerable extent and the supply of hydrocarbon renewed at infrequent periods and in large quantities.

With this object in view the invention consists of the combination and arrangement of parts hereinafter described and claimed and illustrated in the accompanying drawing in which—

Figure 1 is a vertical sectional view of a carbureting apparatus with the invention applied thereto; Fig. 2, an enlarged detail sectional view of the hydrocarbon inlet valve, and Fig. 3, a sectional view of a modification of the invention.

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 serving as a container for hydrocarbon fluid, which is screwed into a flange 15 on the upper face 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, in the drawing.

The tank 10 is kept filled to a certain height with gasolene or other suitable hydrocarbon, in this instance to the top of the partition 20, by means of a float 25 fastened on the lower end of a tubular stem 26 mounted to slide vertically in guides 27 within the cylindrical chamber 11. Supported on the upper end of the tubular guide stem 26 is a cup shaped receptacle 28 communicating with said tubular stem through which stem gasolene passes to the bottom of the tank 10 below the partition 20. The opening leading from the cup 28 is covered with a reticulated diaphragm 29 to prevent the passage of any foreign matter into the tubular guide stem which would obstruct the same.

Air entering the tank 10 through a pipe 19, passes down the small tubes 22 and out through the reticulated caps 23 in minute bubbles into the hydrocarbon fluid or gasolene filling openings 21 in a thick partition 20. The escaping air rises in said holes through the fluid and becomes carbureted, passing thence into the chamber 11 through holes 31. The volatilization of the gasolene gradually reduces the quantity thereof in the tank and the normal level falls in said tank and the chamber 11 which communicate through openings 33 at the bottom of said chamber. The float 25 necessarily follows the movement of the gasolene and opens the gasolene inlet valve in the manner now to be described.

Within the casing 14 is a vertical tube 34, its upper end terminating a short distance below the top of the casing and its lower end extending through the cover plate 12 into the chamber 11 and near the bottom of the cup shaped receptacle 28. The tube 34 is screwed into the cover plate 12, and may be removed and reinserted at any time by means of a suitable tool fitted on its polygonal upper end 35. The lower end 34ª of the tube 34 contains a valve chamber 36

having a valve seat 37 at its upper end for a valve 38 adapted to open and close a channel 39 between the interior of the tube 34 and said valve chamber. The end 34^a of the tube has a slot 40 on one side communicating with and forming an outlet for the valve chamber. A pin 41 in the valve stem projects into the slot 40 and limits the downward movement of said stem and prevents it from falling out of the valve chamber. In the tube 34 just above the cover plate 12 are a series of holes 42 to admit a hydrocarbon fluid from the casing or container 14, which enters said casing through the fluid pipe 43, to the valve chamber and thence into the cup-shaped receptacle 28 through the slot 40. The stem 44 of the valve 38 slides freely in bearings in the valve chamber, and is sufficiently heavy to bear at all times on the bottom of the receptacle 28 and rise and fall therewith as the float 25 moves. When the float falls, owing to the lessening quantity of gasolene in the tank 10, the valve descends with the receptacle and opens communication with the channel 39 and the valve chamber 36, thus permitting gasolene to flow from the container 14 into the receptacle 28 and thence through the tubular stem 26 to the bottom of the tank 10. As the tank fills, the float rises and lifts the valve, finally closing it when the proper level of gasolene in the tank is reached.

One form of the valve structure is shown enlarged in Fig. 2. In this instance, the tube 34^x ends at the under side of the cover plate 12, and screwed into the end of the tube is a plug 45 containing the channel 39^x and the valve seat 37^x. The valve chamber 36^x is formed in a separate tube 46 screwed into the bottom of the plug 45, or it may be integral therewith.

Rising from the center of the cover plate 12 is a tubular casing 47 within which is placed a rod 48 having an enlargement on its lower end to rest on the bottom of the receptacle 28, or the screen 29. The upper end of the rod 48 is arranged to receive one or more weights 49 which by their pressure acting through said rod and the tubular stem 28 change the buoyancy of the float and the height of the gasolene level in the tank 10, as the greater the weight the higher will such level be. The ability to change the gasolene level is of advantage, as it enables the production of gas to conform to the air pressure and also to the quality of hydrocarbon used.

The upper end of the tubular casing 47 is preferably enlarged or provided with an enlargement 50 to inclose the weights 49, and is closed by a screw cap 51 or other convenient means.

A modification of the structure and arrangement of valve mechanism is shown in Fig. 3. Here it will be seen that the pipe 34 is dispensed with and the tubular casing indicated by 47^y used alone. In place of the flange 15, the cover plate is provided with a neck 52 threaded to receive a branch of a T-coupling 53, into the opposite branch of which the casing 14^y is screwed. The gasolene feed pipe 43^y is connected to the remaining branch 54 of the T-coupling 53. Through the center of the cover plate 12^y and the neck 52 is bored a hole, threaded at its upper end for the tubular casing 47^y into which latter is screwed or otherwise fastened a plug 55 through which is made a vertical perforation 56 for a valve stem 57, and a valve seat 58 on the underside of said plug for a valve 59. The valve stem moves freely in a vertical direction, and to prevent it from becoming misplaced, a pin 60 extends transversely through said stem above the plug. A finger 61 integral with or screwed on the under side of the valve, rests on the bottom of the cup shaped receptacle 28 to close the valve when said receptacle rises and also acting as a weight to open said valve. The valve stem 57 is preferably made cruciform in cross section, or cut away or reduced in size where it passes through the plug 55 to enable gasolene in the casing to pass through the perforation 56 into the receptacle when the valve is open. To protect the valve and valve seat when handling the plug 55, the latter is provided with a downwardly extending peripheral flange 62.

The rod 48^y does not extend through to the receptacle 28^y as in the preferred form, but has a conical foot piece 63 on its lower end within the casing 47^y adapted to seat in a similarly formed depression 64 in the upper end of the valve stem. Holes 65 are made through the tubular casing 47^y to admit gasolene thereinto from the casing 14^y.

The operation of the modified form of device will be readily understood from an inspection of the drawing in connection with the description of the preferred form of apparatus.

I do not claim herein broadly a tank containing a float having a tubular stem with a cup-shaped upper end adapted to operate a hydrocarbon fluid inlet valve as the float rises and falls, and means for adjusting the position of said float to vary the fluid level in said tank, such matter being claimed in my co-pending application Serial No. 580,931, filed of even date herewith; but

What I do claim is:—

1. In a carbureter, a tank, a float therein, a stem attached to said float, an inlet valve for admitting hydrocarbon fluid into said tank, a container for hydrocarbon fluid, a tube carrying said inlet valve and communicating respectively with the inlet valve and the container, the stem of said inlet valve adapted to open and close the valve by the movement of said float, a rod supported on

said float stem adapted to carry weights for changing the position of the float and the normal level of the hydrocarbon in the tank.

2. In a carbureter, a tank, a float therein, a stem attached to said float and having an enlarged top, an inlet valve for admitting hydrocarbon fluid into said tank, a hydrocarbon container, a tube carrying on one end said inlet valve, said tube communicating respectively with said valve and the container, the stem of said inlet valve adapted to open and close the valve by the movement of the float, means on the upper end of said tube to enable the same and the inlet valve to be removed, and a rod supported on said float stem adapted to carry weight for changing the position of the float and the normal level of hydrocarbon fluid in the tank.

3. In a carbureter, a tank, a float therein, a tubular stem having an enlarged top attached to said float and extending nearly to the bottom of said tank, means for weighting said float to change the position thereof and vary the level of hydrocarbon fluid in the tank, and an inlet valve above said float stem, the stem of said inlet valve being supported on the float stem and adapted to open said inlet valve when the float falls to permit hydrocarbon fluid to pass into said float stem and be carried to the bottom of the tank.

4. In a carbureter, a tank, an upwardly extending casing attached to said tank adapted to contain a hydrocarbon fluid supply for said tank, an inlet valve between the tank and the casing, a float in said tank, a float stem in operative engagement with said inlet valve to open said valve when the float falls and admit fluid into the tank, and means for weighting said float whereby its position may be changed and the fluid level in the tank varied.

5. In a carbureter, a tank, an upwardly extending casing attached to said tank adapted to contain a hydrocarbon fluid supply for said tank, a tube in said casing screwed into the bottom thereof, an inlet valve on the lower end of said tube projecting into said tank, a float in said tank, a float stem in operative engagement with said inlet valve to open said valve when the float falls and admit hydrocarbon fluid into said tank, a rod supported on said float stem and extending to the top of the casing, and means for weighting the upper end of said rod to change the position of the float to vary the fluid level in the tank.

6. In a carbureter, a tank, a valved port through which hydrocarbon fluid is admitted into said tank, and a float structure adapted to open and close said port as the level of the fluid in said tank changes, said structure including a member movable with the float and positioned to receive the fluid from said port when open and conduct it below the surface of the fluid in the tank.

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

CLARENCE M. KEMP.

Witnesses:
WILLIAM T. HALL,
M. YOUNG.