No. 813,796. PATENTED FEB. 27, 1906.

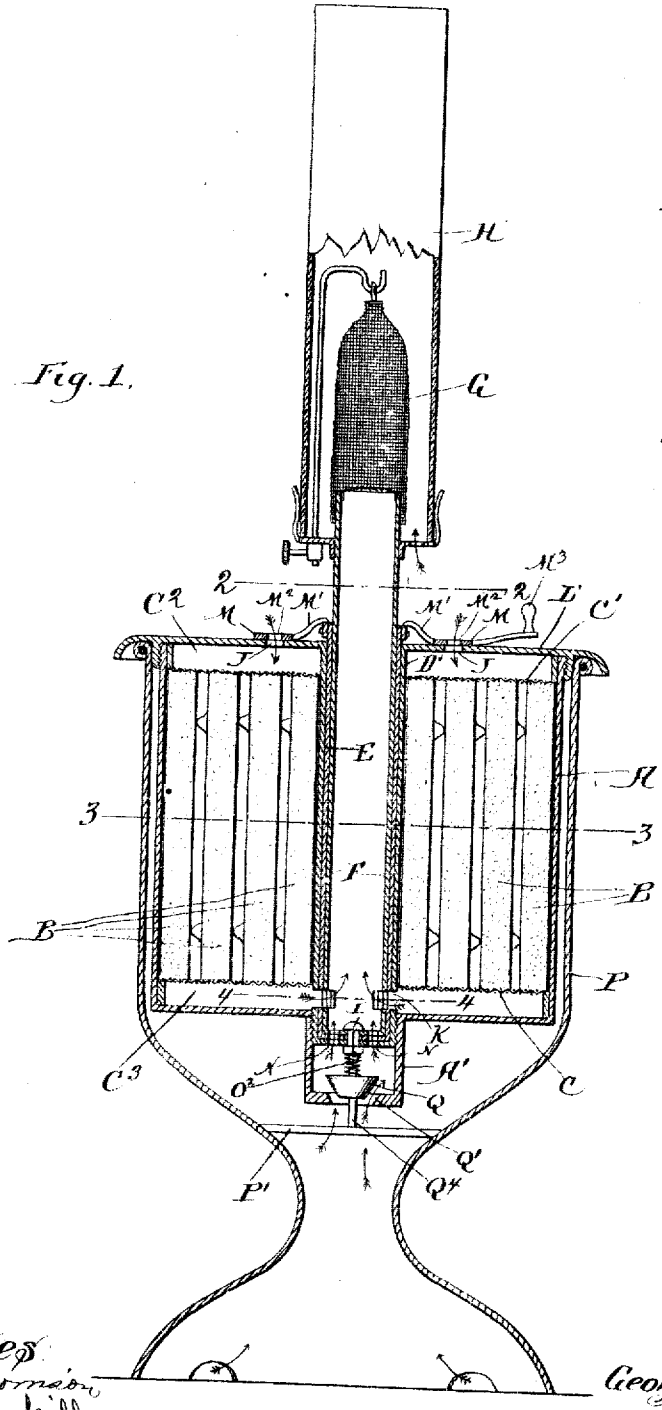
G. H. HOLGATE.

CARBURETER.

APPLICATION FILED OCT. 16, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
L. H. Morrison
J. M. Gaskill

Inventor:
George H. Holgate
By H. B. Hallock
Atty.

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2 SHEETS—SHEET 2.

Fig. 2.

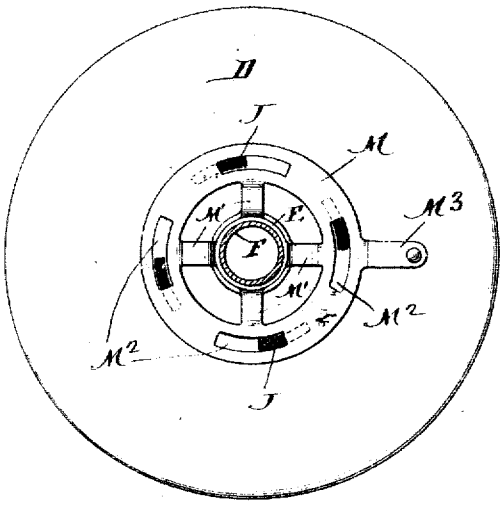


Fig. 3.

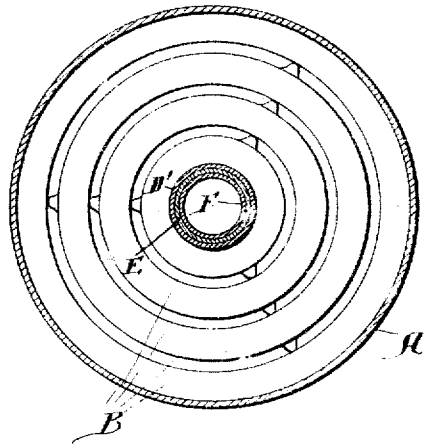


Fig. 4.

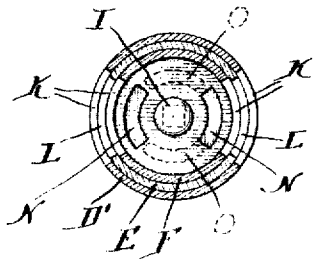
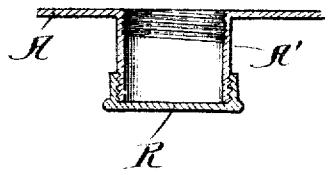


Fig. 5.



Witnesses:
L. H. Morrison
J. M. Markell

Inventor.
George H. Holgate.
By H. B. Hallock.
Atty

UNITED STATES PATENT OFFICE.

GEORGE H. HOLGATE, OF PHILADELPHIA, PENNSYLVANIA.

CARBURETER.

No. 813,796. Specification of Letters Patent. Patented Feb. 27, 1906.

Application filed October 16, 1905. Serial No. 282,975.

To all whom it may concern:

Be it known that I, GEORGE H. HOLGATE, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Carbureters, of which the following is a specification.

My invention relates to a new and useful improvement in carbureters, the same being especially designed for use in connection with portable lamps, although I do not confine myself to this particular adaptation of the invention, because I may employ the improved device or parts thereof in any kind of apparatus and for different purposes.

One object of this invention is the provision of an exceedingly compact carbureter which may be embodied in the construction of a lamp or it may be used as a font for standard-size lamps, thus enabling the device to be employed interchangeably in connection with any kind of a lamp-body of a certain size and permitting a merchant to supply the public with a font available for service in lamp-bodies owned by the purchaser.

A further object of the invention is to equip the structure with means for automatically inducing the circulation of an air-current adapted to be charged with a hydrocarbon and produce a combustible vapor available for heating an incandescent mantle.

Further objects in view are the provision of means for cutting off the circulation of air and vapor by the simple adjustment of a single device to prevent the leakage of vapor and to allow the absorbent member of the carbureter to be recharged easily.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the actual scope thereof will be defined by the annexed claims.

Reference being had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, Figure 1 is a longitudinal vertical section through my improved carbureter shown in form of a lamp; Fig. 2, a horizontal section taken on the line 2 2 of Fig. 1; Fig. 3, a horizontal section taken on the line 3 3 of Fig. 1; Fig. 4, an enlarged horizontal section taken on the line 4 4 of Fig. 1; Fig. 5, a detail view of the lower portion of the font, showing a modified means for closing the lower end when the font is filled with the vapor-producing fluid.

In the drawings, A represents the font or receptacle in which the absorbent member is contained. This font is cup-shaped, with a depression A′ in the center of the bottom thereof.

B represents the absorbent material contained within the font A, and this absorbent material may be either a composition of plaster-of-paris or the like, felt, sponge, or any other material capable of absorbing a liquid; but I prefer to use a composition of plaster-of-paris and other ingredients which may be divided into sections and held within the font, so that there are spaces between the sections to allow for the free circulation of air. This may be accomplished in any manner desired, the form shown in the drawings, however, being preferable, which consists of concentric rings nested one inside the other with spaces between the rings. In order to provide a free air and vapor space above and below the absorbent material, I secure upon the inside of the font the perforated screen C, a slight distance above the bottom of the font, upon which the absorbent material rests, and the absorbent material does not reach quite to the top of the font, and, if desired, a perforated screen C′ may be placed above the absorbent material to hold said material in place. Thus it will be seen that an upper chamber C^2 is formed and also a lower chamber C^3.

D forms the top of the font, which may be preferably threaded around the outside of the same, and at the center of the top a tube D′ extends downward and is threaded into the depression A′ at the bottom of the font. The lower end of this tube D′ is closed, except as for air-inlets, to be hereinafter described; but said tube D′ is open at the top, and within this tube D′ is fitted a tube E, which is open at the top, but closed at the bottom, except for certain air-inlets. Fitted within the tube E is a third tube F, which is also closed at the lower end and fits closely on top of the lower end of the tube E, as the lower end of the tube E fits upon the top of the lower end of the tube D′. The upper end of the tube as extends upward above the font, and where the carbureter is to be used as a lamp a mantle G is suspended over the upper end of the tube F, and a chimney H surrounds the mantle in the well-known manner.

The tubes F and D′ are stationary tubes, and any means can be employed for making the central tube stationary, here shown as by means of a square bolt I, passing through

from the bottom of the tube D′ to the bottom of the tube F, the bottom of the tube E having an opening large enough so that the tube E can revolve in between the tubes F and D′. Through the top D of the font are provided openings J, through which air may enter, and passing downward through the spaces of the absorbent material, which is saturated with the vapor-producing fluid, becomes heavier by the hydrocarbon and flows into the lower chamber C^3. Openings K are formed through the walls of the tubes F and D′ coincident with one another opposite the space C^3, and through the revolving tube E are formed openings L, which may be brought in register with the openings K by revolving said tube E. Thus when the openings L are in register with the openings K the gas formed by the mixture of hydrocarbon and air will pass upward through the central tube F if any heat is applied at the upper end of the tube to cause an induction. In the case of a lamp this induction is generated by heat being applied within the chamber F, and the gas passing up the tube F is lighted almost instantly, and the burning of this gas furnishes the heat for keeping up the continuous induction. The openings J are closed or opened simultaneously with the opening of the passages K. To accomplish this, I provide a ring M, which is connected by spring-arms M′ with the middle or revolving tube E. This ring M comes down upon the top of the font with a spring-pressure over the openings J, and said ring is provided with openings M^2, which may be brought in and out of register with the openings J. Thus as soon as the openings K are opened for admitting gas to the inner tube F the openings J and M^2 will be brought in register with one another to admit air, and the proper mixture can be obtained by revolving the tube a more or less distance. A handle M^3 is provided for the revolving of the ring M, which in turn revolves the tube E. It is desirable to also admit the outside air at the lower end of the tube which carries the gas upward; but this air is only to be admitted when the mixture is very rich and when the fluid is nearly evaporated from the absorbent material and it is necessary to open the ports J and K to their widest extent. Then no air, or at least very little, should be admitted to the lower end of the gas-tube. To accomplish the admission of this air and the proper regulation of the same from the one point, I form through the bottom of the tubes F and D′ the ports N, which are coincident with one another, and through the bottom of the tube E, which revolves between the bottoms of the tubes F and D′, I form the openings O, which may be brought in and out of register with the ports N; but these openings O are so located that they will only be in register to their fullest extent with the ports N when the ports J and K are closed, and as the ports J and K are gradually opened the ports N will be gradually closed, so that when said ports J and K are fully opened the ports N will be fully closed. Thus it will be seen that the regulation of the three inlets will all be accomplished from one handle or lever, and the air will be admitted at the upper end of the font directly above the absorbent material and at different points around the surface, so that the air will be equally distributed as it enters.

P represents the body of a lamp, which may be of any suitable shape or design, the font simply resting within the body and may be easily removed by lifting upward.

When it is desired to charge the absorbent material with the gasolene, benzin, naphtha, petrol, or other fluid hydrocarbon, the top D is unscrewed from the font, which also removes the tubes D′, E, and F, together with all the parts attached thereto. This leaves simply the font open at the upper end, and the fluid is poured into the font, and when the material will absorb no more fluid the residue is drained out. As the lower end of the font must be opened for the admission of air to the central tube F, some means must be employed for closing the lower end of the font when the same is to be filled. In Fig. 1 of the drawings I have shown means for automatically closing the lower end of the font when the font is removed from the lamp-body and automatically opening the same when it is placed in the lamp-body. This consists of a plug-valve Q, located in the lower end of the depressed portion A′ of the bottom of the font. Q′ is an opening formed through the bottom of this depressed portion, and the valve Q is adapted to be pressed downward and close this opening by means of the spring Q^2; but when the font is placed within the lamp-body a stem Q^4, extending downward from the valve, strikes against a cross-piece P′ on the lamp-body, which holds the valve open for the admission of air as long as the font is in the body; but as soon as the font is removed for filling the valve automatically closes. After the font has been filled and it is desired to pour off the unabsorbent liquid if desired the liquid can be drained off through the opening Q′ by simply raising the valve Q. This might be more convenient than pouring it out of the font by tilting the same, especially if such absorbent material is used which might be disarranged by the tilting of the font. Of course the lower end of the font could be closed otherwise than automatically—as, for instance, by means of a screw-cap R, as shown in Fig. 5, this cap R being removed when the font is in use and being screwed upon the nipple A′ when the font is to be filled.

It will thus be seen by this improved construction of carbureter that I am enabled to control all of the inlet-openings from one

lever without revolving the central tube through which the gas passes, and by having the inlet for air directly through the top of the font a better distribution of the air is accomplished, and by means of the spring-ring a gas-tight joint is maintained at all times, and by providing for the opening of the entire top of the font access can be gained to the absorbent material at all times without doing any unsoldering.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of the invention.

Having thus fully described my invention, what I claim as new and useful is—

1. A carbureter consisting of a font or receptacle, absorbent material contained within said receptacle, said absorbent material so arranged as to leave a space above and below the same within the receptacle, a stationary tube extending downward through the center of the receptacle open at its upper end and closed at its lower end; a central gas-tube arranged within the first-named tube, said gas-tube also closed at its lower end and open at its upper end, means for causing the central gas-tube to remain stationary, a middle tube arranged between the two aforesaid tubes and adapted to revolve around between the same, ports formed through the walls of the two stationary tubes coincident with one another within the space below the absorbent material, openings formed through the walls of the revolving tube adapted to be brought in and out of register with the ports of the stationary tube, openings formed through the top of the font, a valve connected to the revolving tube for opening and closing these ports when the tube is revolved, ports for admitting air through the lower end of the gas-tube, means for opening and closing these ports by the revolution of the revolving tube, the bottom of the font provided with an opening for admitting air to the central gas-tube, means for closing said opening when the font is to be filled with a liquid, a chimney surrounding the upper end of the gas-tube, a burner arranged over the upper end of the tube within the chimney, as and for the purpose specified.

2. In a carbureter for lamps and the like, a font or receptacle, absorbent material contained within said font or receptacle, said absorbent material so arranged within the font as to leave a space above and below the same, a removable top for closing the upper end of the font, a tube open through the top at its upper end extending downward through the absorbent material to a point near the lower end of the font, the lower end of said tube being closed, a gas-tube arranged within the other tube, said gas-tube extending above the font and open at its upper end, the lower end being closed, means for causing said gas-tube to remain stationary, a middle tube arranged between the two other tubes and adapted to revolve in close contact with both of said tubes, the two stationary tubes provided with ports coincident with one another formed through the walls of the same within the space below the absorbent material, the revolving tubes provided with openings adapted to be brought in and out of register with the ports as the tube is revolved, the top of the font provided with openings, a ring lying flat over said openings, spring-arms connecting said ring with the revolving tube so that the ring will be held in spring contact with the tube, said ring provided with openings adapted to be brought in and out of register with the openings through the tube when the tube is revolved, the lower end of the two stationary tubes being provided with ports formed through the same coincident with one another, the lower end of the revolving tube being provided with openings adapted to be brought in and out of register with said ports when the tube is revolved, means for revolving said tube, the lower end of the font being provided with an opening through which air is admitted to the lower end of the gas-tube, a hollow body in which the font is adapted to rest, a valve for controlling the opening through the lower end of the font, means for automatically opening said valve when the font is placed within the body, and means for automatically closing the valve when the font is removed, a chimney arranged around the upper end of the gas-tube, and a burner within the chimney arranged above the gas-tube, as and for the purpose specified.

3. In a carbureter, a receptacle, absorbent material arranged within the receptacle, said absorbent material formed in the shape of concentric rings nested one inside of the other and spaced a distance apart, means for holding said rings at equal distances apart, a perforated screen arranged within the receptacle a slight distance above the bottom of the same upon which the absorbent rings rest, the absorbent rings extending upward to within a short distance of the top of the receptacle so as to leave a space above the same, means for admitting air to the upper space, means for taking the mixed air and vapor from the lower space, and means for controlling these inlets from the exterior of the receptacle, as specified.

In witness whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

GEORGE H. HOLGATE.

Witnesses:

WILLIAM E. TOLAN,

L. W. MORRISON.