2 Sheets—Sheet 1.

J. M. PALMER.

Gas-Carbureter.

No. 226,875. **Patented April 27, 1880.**

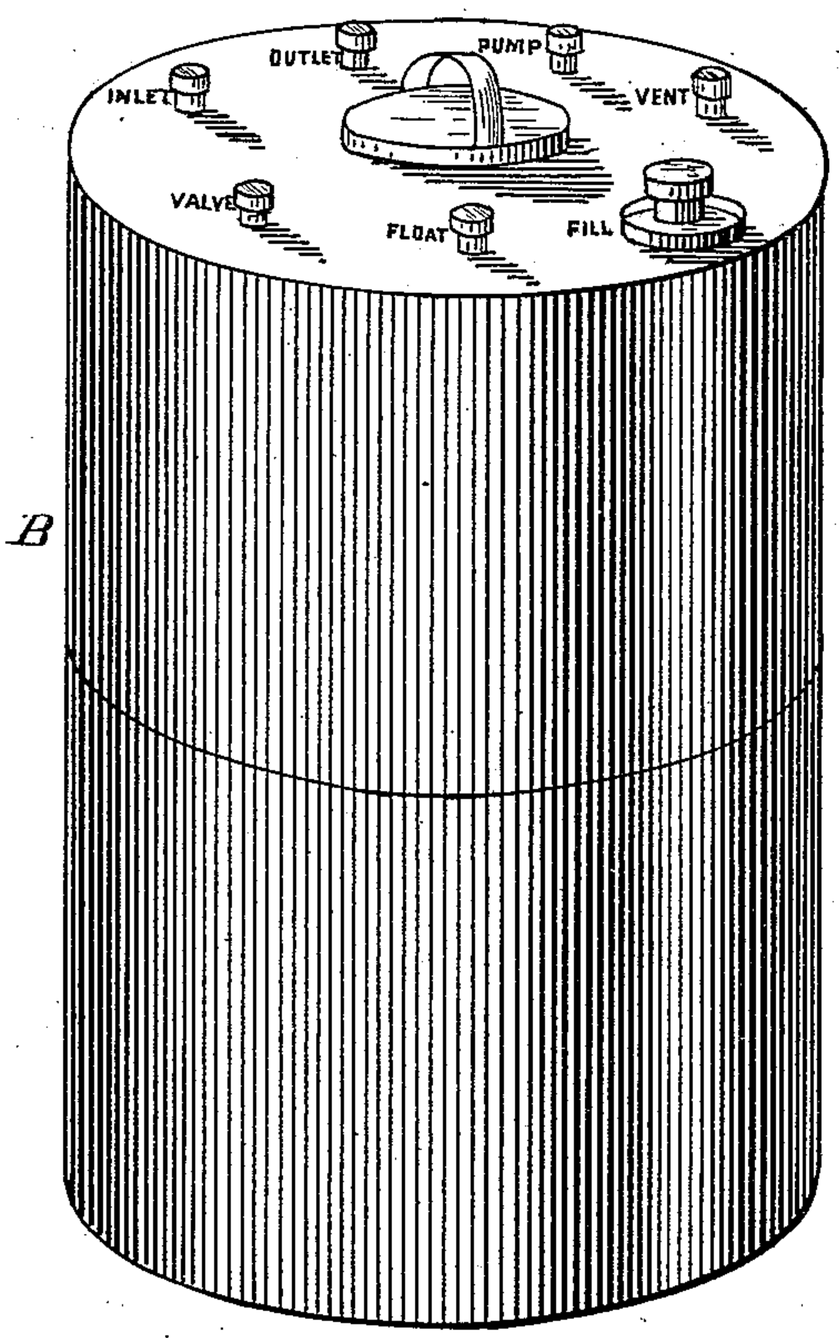


Fig. 1.

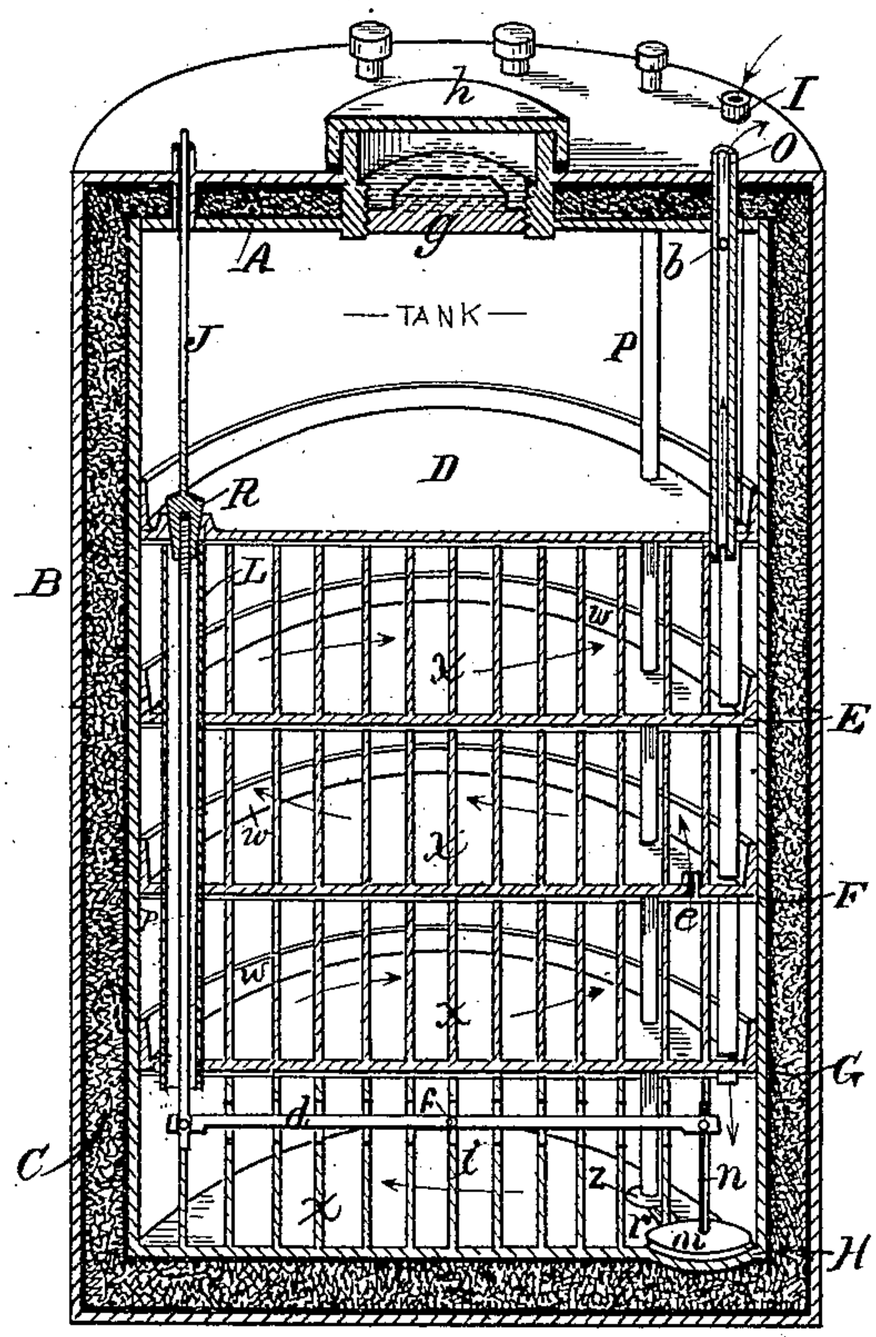


Fig. 2.

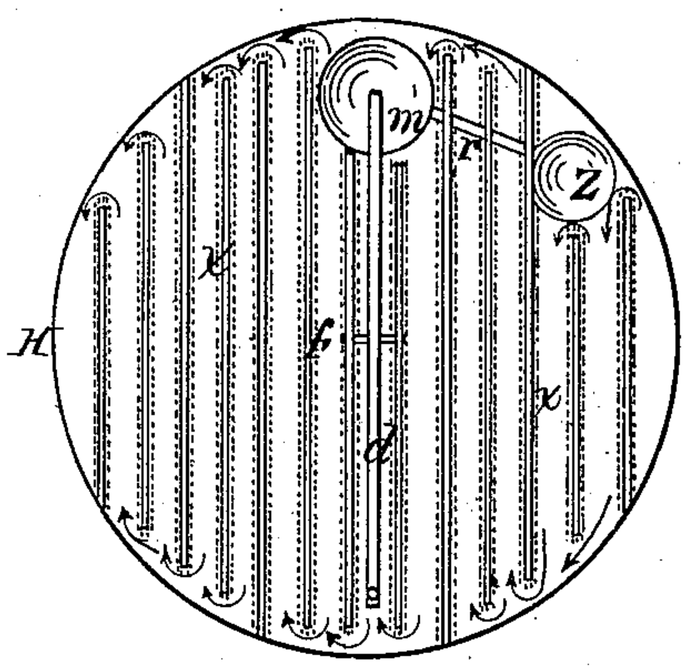


Fig. 3.

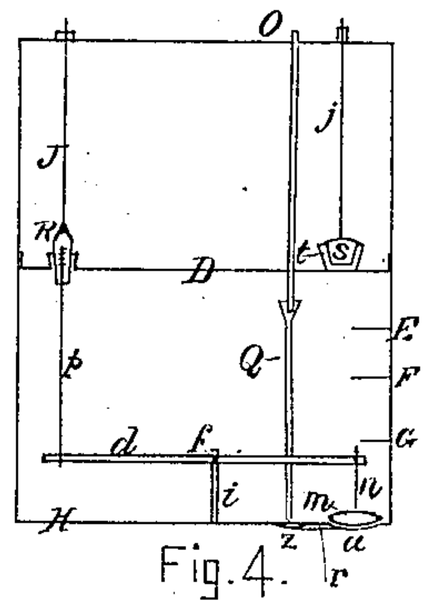


Fig. 4.

Witnesses:

John McGlinchy
Wm. H. Diehl.

Inventor.

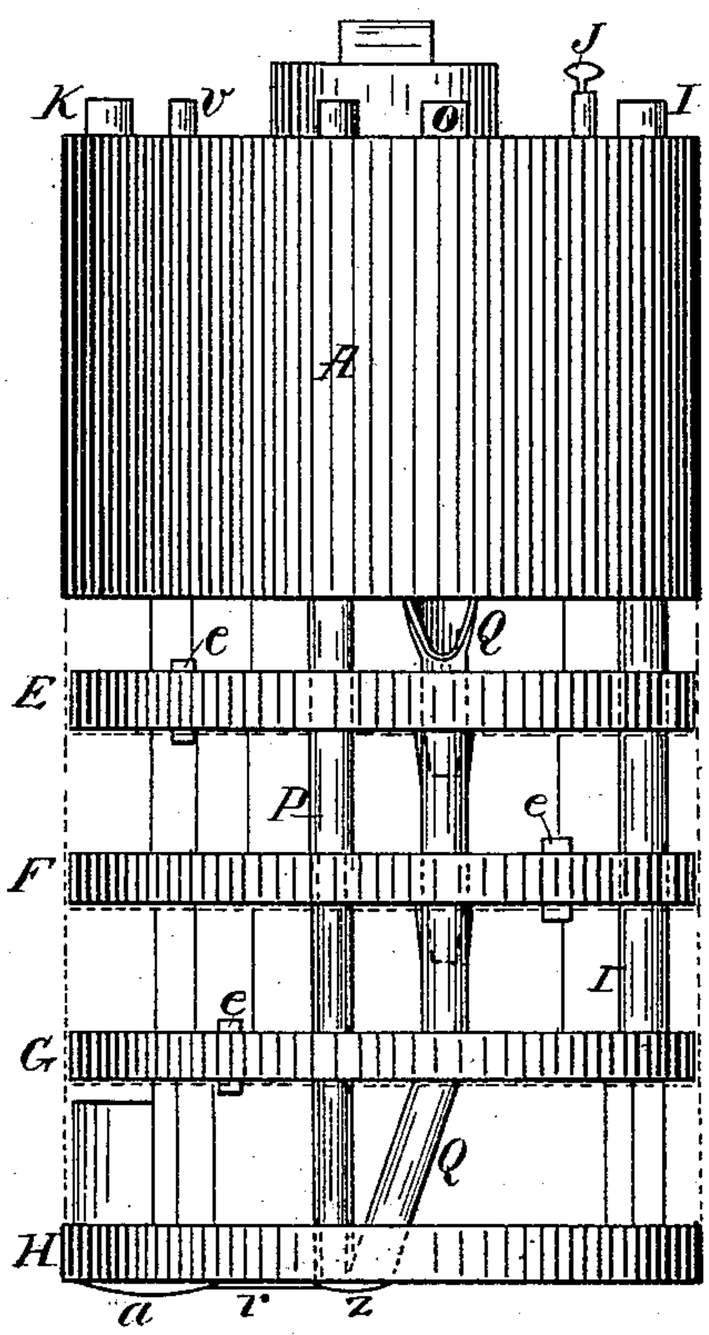
James M. Palmer,
Per C. A. Shaw.
Atty.

2 Sheets—Sheet 2.

J. M. PALMER.

Gas-Carbureter.

No. 226,875. **Patented April 27, 1880.**



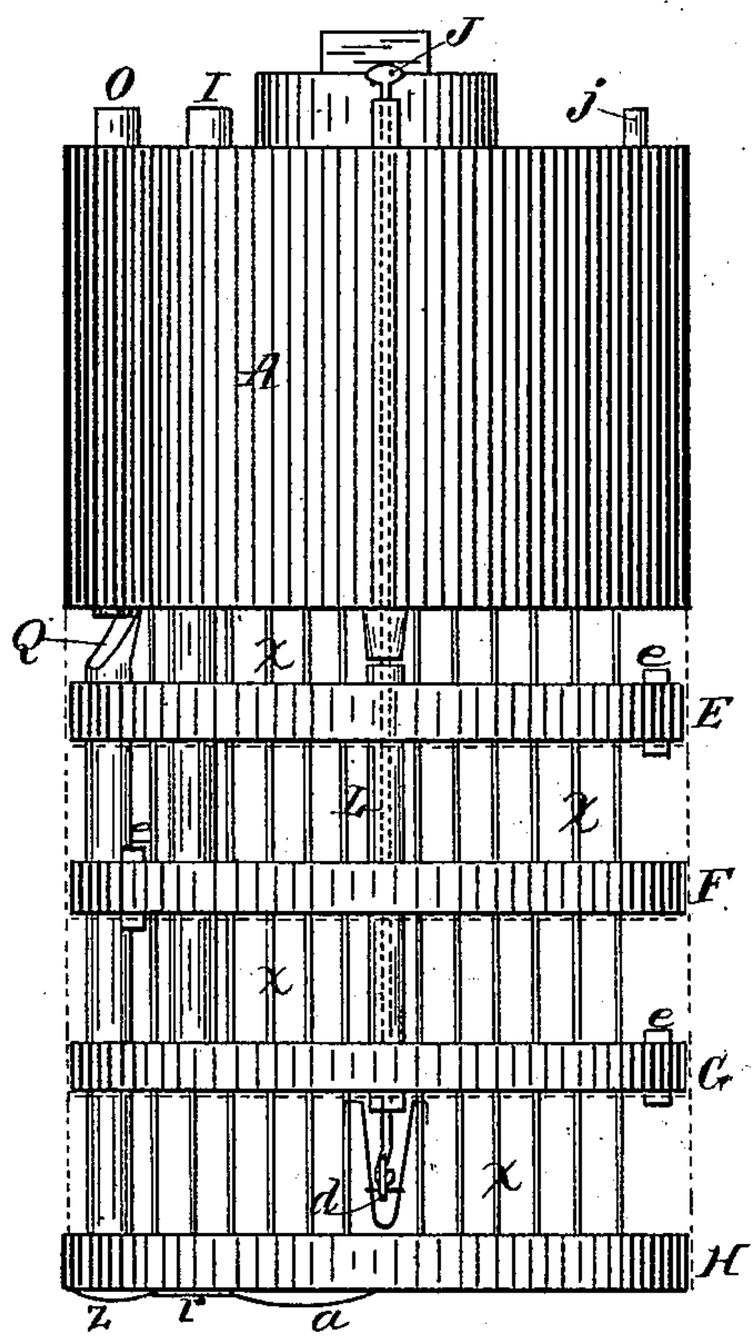


Fig. 5.

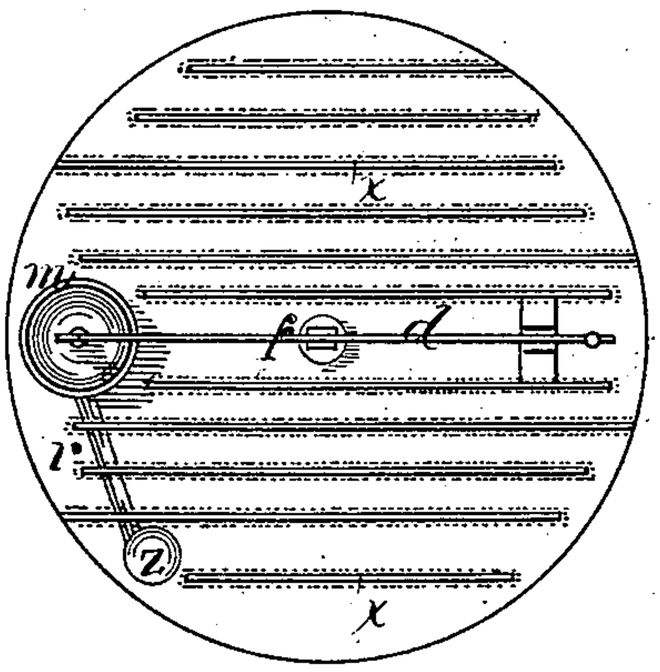


Fig. 6.

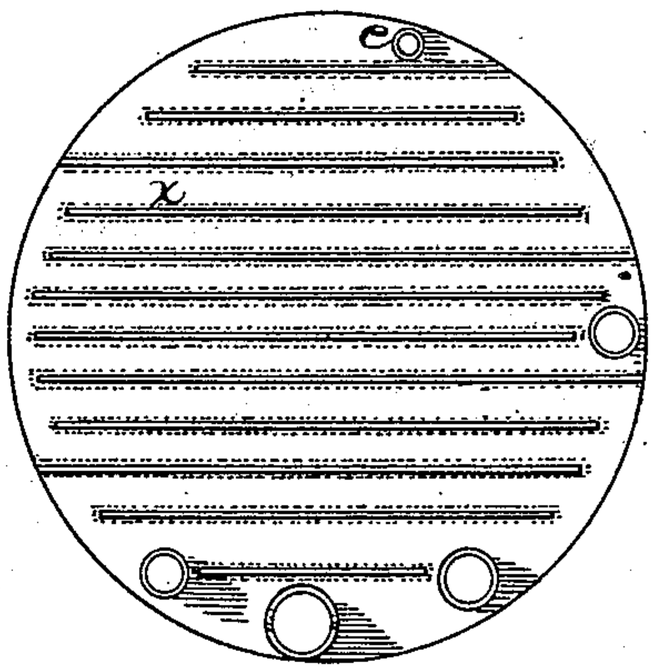


Fig. 7.

Witnesses:
John McElhinney
Wm. H. Diehl.

Fig. 8.

Inventor:
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Atty.

UNITED STATES PATENT OFFICE.

JAMES M. PALMER, OF CAMBRIDGE, MASSACHUSETTS.

GAS-CARBURETER.

SPECIFICATION forming part of Letters Patent No. 226,875, dated April 27, 1880.

Application filed January 30, 1880.

To all whom it may concern:

Be it known that I, JAMES M. PALMER, of Cambridge, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Gas-Carbureters, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which my invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view; Fig. 2, a vertical transverse section; Figs. 3 and 7, plan views of the bottom of the apparatus shown in Figs. 5 and 6; Fig. 4, a skeleton view, showing the arrangement of the valve mechanism, float, and drip; Figs. 5 and 6, sectional views, showing the apparatus with the outer and a part of the inner casing removed, and Fig. 8 a plan view of one of the shelves.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to that class of gas-carbureters which are self-feeding or provided with an automatic valve mechanism; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more efficient device of this character is produced than is now in ordinary use.

In the drawings, A represents the body or carbureter proper, and B the outer casing, the space between the two being packed or filled with cement, plaster-of-paris, wood-ashes, powdered soap-stone, or any other good non-conductor of heat, as shown at C in Fig. 2.

The carbureter is divided into two principal sections—a tank for containing the hydrocarbon oil and an evaporator for evaporating it. The tank is disposed in the upper portion of the apparatus, being separated from the evaporator by the bottom D.

The evaporator consists, essentially, of a series of shelves, E F G, and the bottom H, provided, respectively, with the vertical partitions *x x*. These partitions are so arranged as to form a labyrinthine passage for the gas, as shown by the arrows in Fig. 3, and are designed to be covered with felt or any similar fibrous substance, as represented by the dotted lines in Figs. 3, 5, 7, and 8. The interior walls of the generator and under sides of the shelves are also designed to be covered with an absorbent material.

Disposed in the lower compartment of the generator there is a horizontally-arranged lever, *d*, which is centrally pivoted at *f* to the support *i*. One end of this lever is jointed to the float-rod *n* and the other to the valve-rod *p*, the latter passing vertically through the tube L, supported in the shelves, and being connected at its upper end to the conical valve R, located within the tank, and which is fitted to work in a proper seat formed in the bottom D in such a manner as to open upwardly.

Extending from the valve R through the top of the tank, as seen in Fig. 2, there is a small rod, J, by means of which the valve may be vertically adjusted from the outside of the apparatus by being screwed onto or off the rod *p*, without opening the main entrance to the tank. This rod also enables the valve to be readily relieved in case it becomes clogged or stuck, and affords a convenient means of ascertaining whether the float *m* is at all times working properly.

The lever *d* may, if preferred, be arranged in the upper compartment of the evaporator instead of the lower, in which case the rod *p* must be shortened and the rod *n* lengthened accordingly, the latter then passing through the shelves to connect the lever and float.

In Fig. 2 the lever is represented as running across or through the partitions in the lower compartment, and in Figs. 3, 6, and 7 in parallelism with the same, either plan being adopted, as preferred.

The float *m* is arranged to work in a depression or well, *a*, formed in the bottom H. This well is connected by the groove or channel *r* with the well *z*, also formed in said bottom, and which is slightly deeper than the well *a*, the connecting-groove *r* inclining downwardly from *a* to *z*, and the latter being disposed on either side of the former, as preferred. (See Figs. 3 and 7.)

A pipe, P, extends from the well *z* upwardly through the shelves and tank, as seen in Figs. 2 and 5. There is also a pipe, Q, extending

from the well *z* through the shelves E F G, being supported thereby. This pipe is flaring or tunnel-shaped at its upper extremity, and is located immediately beneath the outlet-pipe O, which passes vertically through the tank and bottom D.

In order to enable the shelves to be readily inserted in constructing the apparatus, the pipe Q is preferably made in short sections, as shown in Fig. 5, the upper end of each section being larger than its lower end, so that the sections may be readily slipped over each other or coupled together to form a continuous pipe from the upper to the lower part of the generator.

It sometimes occurs, where the piping of a building is very old, that an accumulation of tar deposited from the common gas has taken place around the joints of the pipe, which will be dissolved or liquefied by the carbureted gas and find its way through the outlet-pipe O into the carbureter, interfering materially with its proper working. The pipe Q is designed to obviate this difficulty, conducting the tar and all other drainage entering through the outlet-pipe directly to the bottom of the apparatus and into the well *z*, from which it may be pumped through the pipe P, the latter pipe also being used whenever it becomes necessary to pump out the carbureter, whether on account of a deposit in the generator or for any other reason.

Through the top of the tank and outer casing there is an opening fitted with the screw-plug *g* and cap *h*, the plug being sealed or water-packed when the carbureter is in use.

The tank is also provided with a filling-pipe, K, vent-pipe *v*, and test-float *s*. The bulb of this float has a rod, *j*, extending upwardly through the top of the apparatus, and there is a cup or socket, *t*, attached to the bottom D, to receive the bulb when the rod is depressed, thus preventing the rod from being accidentally bent or the float injured during transportation.

An inlet-pipe, I, extends vertically through the tank and shelves, terminating immediately below the shelf G. This and all other pipes, where they pass through the shelves, are properly packed to prevent leakage, and all openings from or into the machine are securely guarded by screw-caps or other proper appliances.

The shelves E F G have raised annular flanges *w*, and are each provided with an opening, *e*, for the passage of the gas, the openings being surrounded with upwardly-projecting guards or nipples, slightly lower than the flanges *w*, as best seen in Fig. 2.

In the use of my improved carbureter, the inlet and outlet pipes having first been properly connected to the gas-pipes of the building, the hydrocarbon is let into the tank through the pipe K, the displaced air and vapors of the oil escaping during the operation through the vent *v*, and being conducted by means of a pipe (not shown) out of the building or into the filling-can, as most convenient. As the fluid enters the tank it passes through the valve R onto the upper shelf, E, and when of sufficient depth on said shelf overflows through the opening *e* onto the next shelf below, and so on until all the shelves are full, when the shelf G will overflow onto the bottom H, causing the float *m* to rise and close the valve, after which the tank may be filled, all in a manner which will be readily understood without a more explicit description. The gas is then let into the lower compartment of the generator through the pipe I, passing between and around the partitions *x x* and from one shelf to another by way of the openings *e*, as shown by the arrows, until it reaches the upper compartment, from whence it leaves the machine through the pipe O thoroughly carbureted and ready for use. As the fluid on the shelves and bottom of the apparatus is taken up by the passing gas the float *m* falls, letting in a fresh supply through the valve R to take the place of that used, thus feeding the carbureter automatically.

As the fluid passes from the tank to the generator the tendency is to form a vacuum in the tank, and thus gradually stop the flow through the valve. This difficulty is obviated by the vent *b* in the pipe O, by means of which communication is established between the tank and generator and the pressure equalized therein.

I am aware that carbureters having a tank for containing the hydrocarbon, a series of shelves provided with vertical partitions for increasing the evaporating capacity, and an automatic valve mechanism are well known, and I do not therefore claim the same, broadly; but,

Having thus explained my invention, what I claim is—

1. The body A, evaporating-shelves E F G, provided with the partitions *x x*, inlet-pipe I, outlet-pipe O, a tank for containing the fluid, the float *m*, pivoted lever *d*, rod *p*, valve R, and rod J, constructed, arranged, and operating substantially as specified.

2. The pipe Q, in combination with the outlet-pipe O, for receiving and conducting the tar and other drainage to the bottom of the apparatus, substantially as and for the purpose specified.

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Witnesses:
C. A. SHAW,
J. B. BRAMAN.