

UNITED STATES PATENT OFFICE.

JAMES W. TALLMADGE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO THE BRIDGEPORT GAS MACHINE COMPANY, OF
SAME PLACE.

RECEPTACLE FOR HOLDING HYDROCARBON OR OTHER VOLATILE LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 570,884, dated November 3, 1896.

Application filed September 19, 1895. Serial No. 562,986. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. TALLMADGE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Receptacles for Holding Hydrocarbon or other Volatile Liquids; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in receptacles for holding hydrocarbon or other volatile liquid, so that said liquid may be drawn off or supplied for any suitable purpose.

One object of my present improvement is to prevent any air from becoming mixed with the volatile liquid, so that the latter may be stored without the slightest danger from explosion, and at the same time, when used in connection with a distilling apparatus, to render the supply of the liquid automatic and dependent upon the amount required by the retort.

My improvement may be used in connection with various arts, but it is especially intended for use as a part of the apparatus for carrying out the process described in Letters Patent No. 499,606, issued to me June 13, 1893, and I have therefore illustrated and will describe my invention in connection with an apparatus for making fixed illuminating-gas from hydrocarbon.

The accompanying drawing, which forms a part of this application, shows an elevation of an apparatus for making illuminating-gas from hydrocarbon, my improved receptacle forming a part of such apparatus and being shown in section.

The parts of the apparatus for making illuminating-gas which I have illustrated are, first, a specially-constructed combined retort and carbureter by means of which the hydrocarbon is vaporized; second, a specially-constructed fixer which receives the vapor

and by means of which all moisture is eliminated from such vapor and the resultant gas or fumes rendered perfectly dry and fixed.

I do not wish to be understood as laying claim in this application to either of these parts and features, since the combined retort and carbureter forms the subject-matter of a separate application for patent filed by me on even date herewith and bearing Serial No. 562,985, while the fixer forms the subject-matter of still another application filed by me on even date herewith and bearing Serial No. 562,987.

It is well known that illuminating-gas has heretofore been made by charging air with volatilized hydrocarbon, but such admixture of air and hydrocarbon is inferior as an illuminator, makes an explosive compound, causes the illuminating-burners to blow, and fills a room with a disagreeable odor.

My improvement aims to obviate these disadvantages by supplying hydrocarbon free from any air, whereby gas perfectly dry or fixed is produced.

1 is a carbureter; 2, a retort connected with said carbureter by a pipe 3; 4, the burner beneath said retort; 5, a short section of pipe depending from the carbureter; 6, a four-way union secured at the end of the pipe 5; 7, a pipe leading from the opposite side of said union to the burner 4, and by means of which said burner is supplied with hydrocarbon; 8, a pipe suitably connected to the bottom of said union and provided with an ordinary draw-off cock 9; 10, a vertical pipe connected at its lower extremity with the roof of the carbureter; 11, the fixer, consisting of a double worm, one of the upper coils of which is connected to the vertical pipe 10; 12, the main service-pipe, connected with the other upper coil of said fixer; 13, any suitable governor on the pipe 12; 14, an ordinary gas-holder on said pipe; 15, a vertical drip-pipe whose upper extremity is connected with back outlet 16 of a return-bend 17, which latter connects the lower coils of the fixer, while the lower extremity of said drip-pipe is suit-

ably connected with the union 6; and 18 is a small pipe which leads from the governor 13 down to the union 6.

All of the parts which I have mentioned immediately above are intimately related with the improvements set forth and claimed in the aforesaid pending applications and are fully described and claimed therein, and the simple reference to these parts herein made is deemed sufficient for the purposes of the description of the present improvement, which latter I will now describe.

a represents a receptacle or supply-tank, closed at the top and bottom, and *b* is a transverse partition which divides said tank into upper and lower compartments *c d*, respectively. These compartments *c d* are connected by a pipe *e*, the upper end of which is flush with the bottom of the compartment *c*, while the lower end of said pipe extends down to a point immediately above and in close proximity to the bottom of the compartment *d*. A pipe *f* extends from a suitable distance above the tank *a* down through the compartments *c d* to the bottom of the latter compartment, where said pipe is turned upward into U shape to form a trap.

g is a vent which establishes communication between the compartment *c* and the outside air.

h is a pipe which is connected at one end of the union 6, said pipe extending through the wall of the compartment *d* and projecting at its upper end to a point near the top center of said compartment.

In the introduction of hydrocarbon within the tank I proceed as follows: Water is introduced through the pipe *f* sufficient to fill the compartment *d* nearly to the level of the upper end of the pipe *h*, and hydrocarbon liquid is then introduced through the same pipe *f* and rises and floats upon the surface of the water in compartment *d*. The agitation of the hydrocarbon liquid caused by its introduction liberates a certain amount of gas, which will pass into the various pipes or the gas-holder, thereby permitting the hydrocarbon liquid to choke the pipe *h* and displace the water in the compartment *d*, whereby said water is forced through the pipe *e* into the compartment *c* in proportion to the amount of hydrocarbon liquid introduced. The pipe *e* prevents the hydrocarbon escaping from the compartment *d*, while the water thus forced up into the compartment *c* exerts a hydraulic pressure that is held in check by the gas until the latter is permitted to escape, as by consumption or in any other suitable manner. When the burner is lighted and the retort heated, the hydrocarbon that is within the retort, the carbureter, and the adjacent or connecting pipes will be forced back and will increase the amount of hydrocarbon in the receptacle *d*. As the gas is consumed sufficient water returns to the compartment

d by its own gravity to force the hydrocarbon liquid, so as to supply the retort, the amount thus supplied being proportionate to the amount of gas required.

Increased consumption of gas of course relaxes the gas-pressure in proportion to the amount of gas consumed and permits the hydraulic pressure to increase the quantity of hydrocarbon liquid supplied to the retort sufficient only to furnish gas to meet the consumption. Reduced consumption increases the gas-pressure, which overcomes the hydraulic pressure sufficient to reduce the supply of hydrocarbon liquid to the retort in direct proportion to the reduced consumption, and thus it will be seen that the supply of the hydrocarbon is perfectly automatic.

As hereinbefore stated, my improvement may be used as a storage-receptacle for holding volatile liquids, and in this respect it is particularly advantageous, since the volatile liquid is confined by a water-jacket and all air is excluded, and therefore it will be readily understood that there can be no danger from explosion, and also the hydraulic pressure insures the proper delivery of the volatile liquid at all times through the delivery-pipe.

The supply-pipe 6 has been shown and described in its preferred arrangement, but said pipe may be led into the lower compartment in any manner and may terminate at any portion or horizontal plane in said compartment, and I do not therefore wish to be limited in this respect. I prefer the arrangement shown and described, since a perfect trap is thereby formed at the bottom of said compartment, and no disagreeable odor can escape up through said pipe.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A receptacle for holding hydrocarbon or other volatile liquid, the same comprising a tank permanently divided into upper and lower compartments by a transverse partition, a pipe leading from the floor of the upper compartment down to a point near the floor of the lower compartment whereby communication is established between said compartments, a supply-pipe for both the oil and water leading into the lower compartment and independent of the said pipe which establishes communication between the compartments, a vent in the upper compartment, and a delivery-pipe extending laterally through the side wall of the lower compartment and projecting at its upper extremity to a point at or about the top center of said compartment, substantially as set forth.

2. A receptacle for holding hydrocarbon or other volatile liquid, the same comprising a tank permanently divided into upper and lower compartments by a transverse partition, a pipe leading from the floor of the upper compartment down to a point near the

floor of the lower compartment whereby communication is established between said compartments, a supply-pipe for both the oil and water leading down through the tank independent of the said pipe which establishes communication between the compartments and terminating at its lower end near the bottom of the lower compartment in a U-shaped trap, a vent in the upper compartment, and a delivery-pipe extending laterally through

the side wall of the lower compartment and projecting at its upper extremity to a point at or about the top center of said compartment, substantially as set forth.

In testimony whereof I affix my signature 15
in presence of two witnesses.

JAMES W. TALLMADGE.

Witnesses:

F. W. SMITH, Jr.,
E. L. WELLS.