

No. 717,444.

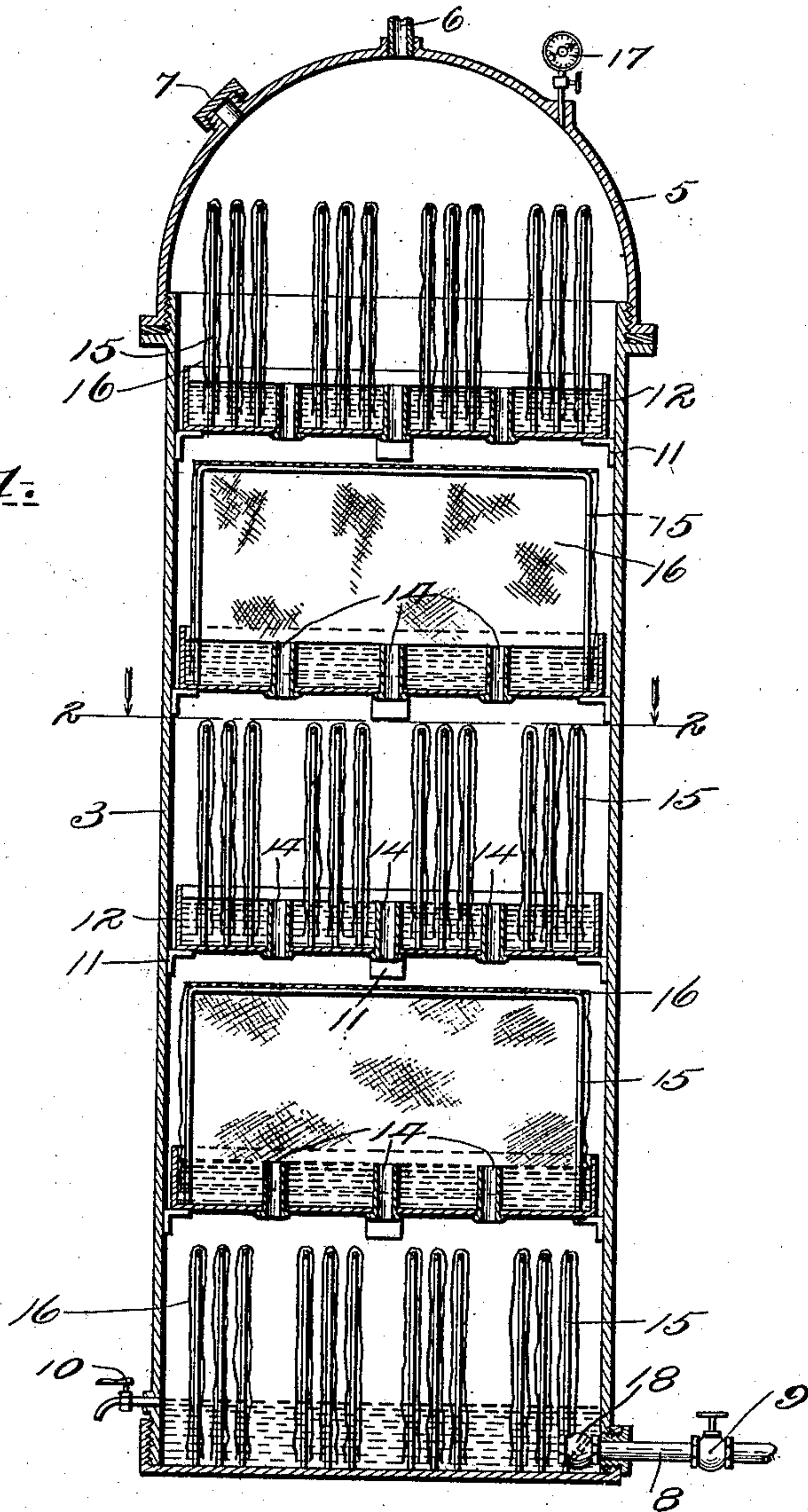
Patented Dec. 30, 1902.

J. P. NAGEL.  
CARBURETER.

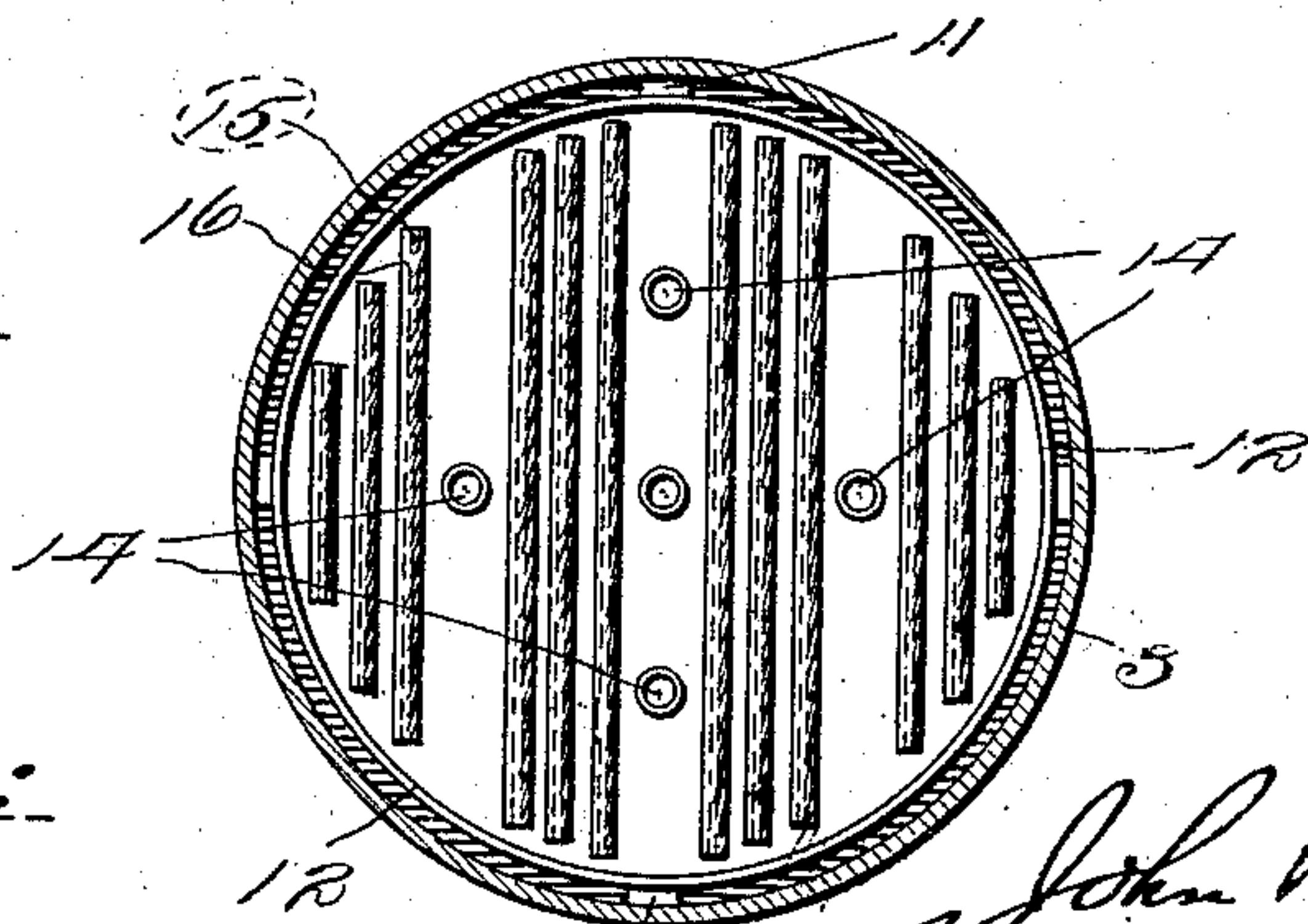
(Application filed Sept. 26, 1901.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

JOHN P. NAGEL, OF CHICAGO, ILLINOIS.

## CARBURETER.

SPECIFICATION forming part of Letters Patent No. 717,444, dated December 30, 1902.

Application filed September 26, 1901. Serial No. 76,700. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN P. NAGEL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to that class of machines in which a combustible or inflammable gas is produced by the volatilization of a suitable liquid, such as gasolene.

The primary object of my invention is to provide an apparatus by which the liquid employed may be rapidly transformed into vapor.

Another object is to provide for maintaining the vapor under pressure sufficient to force it to the burner or burners.

A further object is to intermix the vapor or gas with sufficient air to secure the greatest efficiency in its combustion.

Still another object of the invention is to provide a gas-generator of simple construction and the interior parts of which shall be easy of access for repair or renewal when necessary.

Other minor objects and aims of the invention will be apparent from the subjoined description.

To the above ends my invention consists of a gas-machine having the peculiarities of structure and mode of operation hereinafter described, and more particularly defined in the appended claim.

A preferred embodiment of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevational view, in central vertical section, of a gas-machine embodying my improvements; and Fig. 2 is a transverse sectional plan view on line 2 2 of Fig. 1.

Referring to the drawings for a detailed description of the same, 3 represents the body or shell of the machine, here shown as cylindrical, although the particular conformation is immaterial. The body 3 is closed at the bottom by a plate or cover 4, having a screw-threaded or other engagement therewith, while a dome-shaped cap or cover 5 similarly engages the top of the body or shell 3, closing the upper end of the same. This cover 5 is provided in its apex with a screw-threaded

nozzle 6, to which the service-pipe (not shown) is connected, and a filling-aperture 7. The body or shell 3 of the device is tapped at its lower end by an air-inlet pipe 8, provided with a suitable controlling-valve 9, while a petcock 10, also applied to the body 3 near its lower end, determines the height to which liquid may rise in the latter.

Within the shell 3 are disposed on inwardly-extending brackets 11 a series of shallow pans or trays 12. Each tray has its bottom provided with a series of apertures 13, each aperture being surrounded by an upstanding tube 14 slightly less in height than the tray itself. These apertures are so disposed in the bottoms of the several trays that when the latter are in position none of the apertures will fall in the same vertical line. The object of this construction will appear later in the description of the operation of the device. Soldered or otherwise suitably secured to the bottoms of the several trays are a series of bent-wire racks 15 or equivalent upstanding supports, these racks being designed to support strips of woolen cloth, felt, or other suitable absorbent material, (designated by 16,) the lower ends of which strips extend practically to the bottoms of the trays. These absorbent strips 16 are disposed in close juxtaposition, sufficient space only being left therebetween for the free passage of the air-current rising through the receptacle. My preferred arrangement contemplates the disposition of these absorbent devices in such a manner that the devices carried by one tray will lie in a vertical plane at an angle (preferably a right angle) to the similar devices carried by the next adjacent trays above and below.

It will be understood that the top or cover 5 constitutes a gas-reservoir, in which the gas generated accumulates. An ordinary pressure-gage (indicated at 17) may be applied to the dome 5 to indicate the pressure existing therein at any given time. In connection with the air-inlet pipe 8 I also prefer to employ an ordinary check-valve (indicated at 18) to prevent backflow into the air-pipe 8.

The operation of my invention will be readily understood from the foregoing description, taken in connection with the illustration in the accompanying drawings, but may be



briefly described as follows: The liquid employed in the device is hydrocarbon which readily volatilizes, such as gasoline. The machine is charged with the liquid by pouring the latter through the filling-aperture 7, in which filling operation the liquid first rises in the topmost tray until it reaches the height of the tubes 14, whereupon it overflows through the latter into the second tray from the top and in this manner through the entire series of trays until it rises at the bottom of the receptacle to the height permitted by the petcock 10. Upon the filling of the several trays 12 in the manner described the liquid is at once absorbed by the mantles 16, the lower ends of which are immersed in the fluid. The machine having thus been filled and charged the filling-aperture is closed, and upon opening the air-valve 9 a current of air under pressure is admitted to the base of the receptacle through the pipe 8. This air bubbles up through the liquid in the bottom of the receptacle, rises thence around and through the several trays 12 successively, and in so doing comes into intimate contact with the surfaces of the mantles 16 and passing more or less through the same, which, it will be remembered, are constantly in a saturated condition, and consequently freely give up the liquid which they hold in the form of vapor to the passing current of air. These mantles 16 being as numerous as the capacity of the receptacle will permit present a sum-total surface area to the contact of the rising current which is very considerable, and their effect in charging the air-current with the vapor which they yield up is increased by disposing the mantles in the trays at angles to each other, thereby more thoroughly and effectively breaking up and subdividing the rising current.

The absorbent nature of the material of which the mantles 16 are composed keeps the same constantly saturated by capillary attraction so long as any liquid remains in the trays. After the liquid has been exhausted the device can be recharged by simply pouring a fresh supply through the filling-aperture until the overflow at petcock 10 indicates that the machine is fully recharged. The interior parts may be readily gotten at by simply unscrewing the top or cover 5 and removing the several trays one after the other. The trays may be given any capacity found best suited to the proper charging of the air by varying the depth of the trays and the height of the overflow-tubes 14. Any number of trays up to the limit of the capacity of the receptacle may be employed, the number of trays ordinarily depending upon the height given to the absorbent mantles 16.

Where the latter are given a less vertical extent, of course a greater number of trays may be employed, and vice versa. It will be readily understood, therefore, that it is immaterial to the principle of my invention how many trays are employed, or how many overflow-apertures in each tray, or the exact number, dimensions, or material of the mantles 16, or the specific means herein shown for supporting the latter, or the particular configuration of the receptacle or any of its contained parts, since all of these details may obviously be varied to any desired extent within the scope and purview of my invention.

The pressure of the gas in the generator may be varied by pumping therein a greater or less volume of air; but ordinarily the pressure need not be great, although the contents of the generator should always be under pressure enough to secure a ready discharge of the gas generated.

The introduction of air as described not only promotes volatilization, but it supplies the oxygen necessary to cause the gas to burn with an intensely-hot flame suitable for use with incandescent burners, in gas-ranges, &c. The character of the flame may of course be varied in other ways, as by regulating the quantity of air admitted to the burner.

That which I claim as my invention, and desire to secure by Letters Patent, is—

A gas apparatus consisting of an upright receptacle, an air-inlet pipe communicating with said receptacle at the bottom thereof, a check-valve arranged within the bottom of the receptacle and in suitable relation to the said air-inlet pipe to prevent backflow therein, a series of shallow pans or trays disposed one above the other throughout the interior of the said receptacle, a plurality of vertically-extending overflow-tubes connected with the bottom of each of said trays, a series of racks carried by each of said trays, the racks of one tray extending in an opposite direction to the racks of the adjacent tray, mantles of absorbent material mounted upon said racks, a series of racks mounted upon the bottom of the receptacle, mantles of absorbent material mounted upon the racks upon the bottom of the receptacle, a dome secured to the top of the receptacle and forming a gas-reservoir, a gas-discharge opening in the apex of the dome, said dome further provided with a filling-aperture, a pressure-gage connected with the dome, and a petcock connected to the lower end of the receptacle, substantially as herein shown and described.

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Witnesses:

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