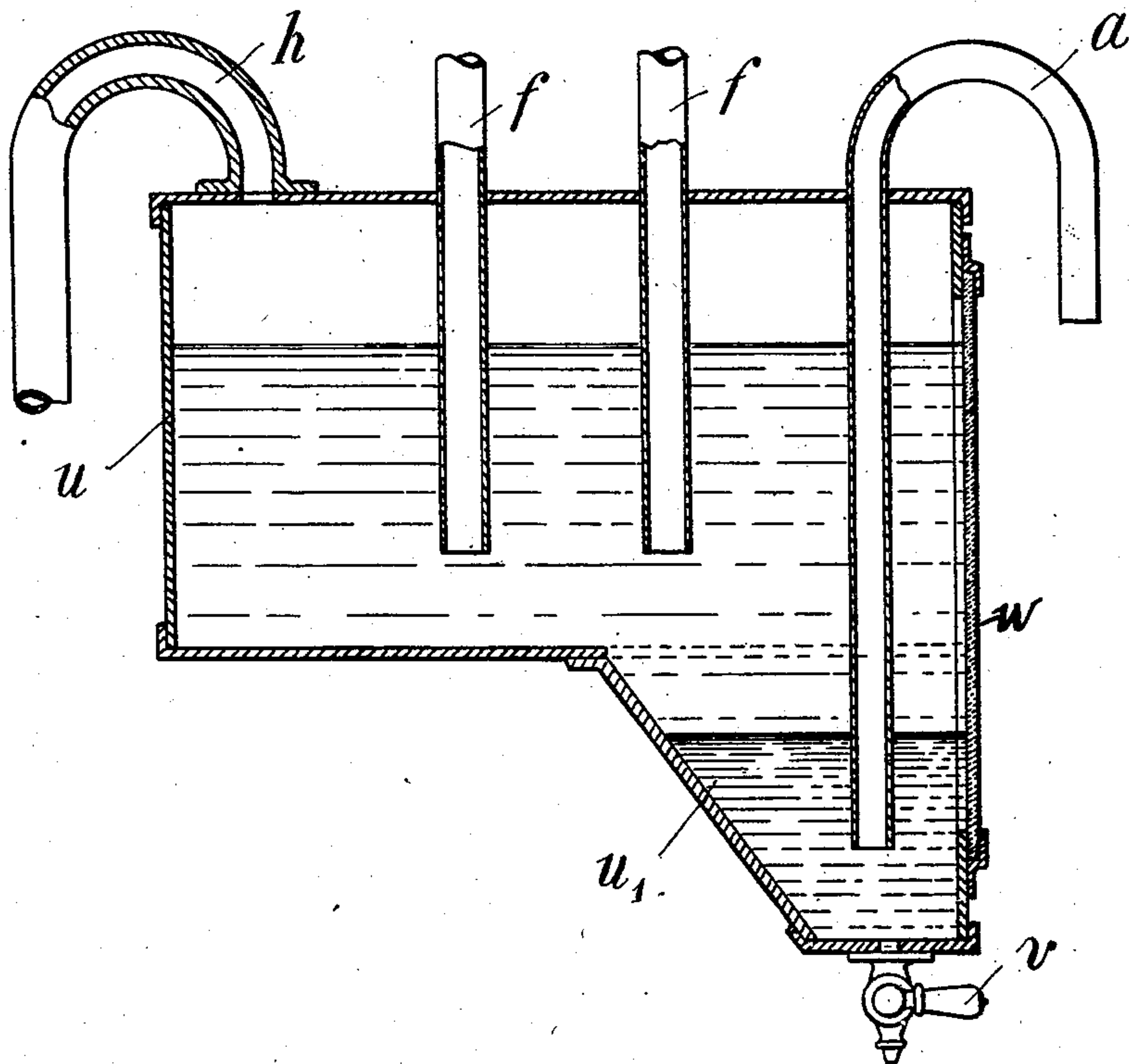


No. 729,514.

PATENTED MAY 26, 1903.

G. G. SMITH.  
GAS DRYING APPARATUS.  
APPLICATION FILED AUG. 8, 1900.

NO MODEL.



Witnesses:-

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By his Attorney  
*Gustave W. Hopkins*

# UNITED STATES PATENT OFFICE.

GEORGE GREGORY SMITH, OF FLORENCE, ITALY.

## GAS-DRYING APPARATUS.

**SPECIFICATION** forming part of Letters Patent No. 729,514, dated May 26, 1903.

Original application filed June 8, 1900, Serial No. 19,614. Divided and this application filed August 8, 1900. Serial No. 26,215. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE GREGORY SMITH, a citizen of the United States of America, residing at San Domenico, Florence, Italy, have  
5 invented a Combined Drier and Back-Pressure Valve for Acetylene-Gas Generators, of which the following is a description.

The present invention relates to a combined drier and back-pressure valve by means of  
10 which gas generated in one of a series of generator-chambers is prevented from passing to any one of the other generator-chambers of the series which might possibly be open.

Another object of the invention is to provide a valve which will be capable of containing a drier to dry the gas before permitting it to pass to the gas-main.

In order to render the present specification easily intelligible, reference is had to the accompanying drawing, which shows a vertical section through an apparatus embodying a form of my invention.

The casing *u* is advantageously provided with a dip or well *u'* at the bottom, in which  
25 the water separated out from the gas may collect. The pipe *h* leads from the casing to the gasometer, and the pipes *f f* are the gas-pipes leading from the various generator-chambers or other supply. A petcock *v* may be provided at the bottom of the dip *u'*, by means  
30 of which the water collecting in the dip may be drawn off from time to time. Instead of a cock a pipe *a* may be provided, which is shown as reaching down into the dip or well *u'* and through which the water collecting below the drying-seal will be forced off by means of the gas-pressure in the casing.

A window *w* or any ordinary gage-glass may be arranged in the wall, the said window advantageously extending down into the dip through which the amount of water in the latter may be seen and if it is being drawn off by hand the exit closed in good time to prevent drawing off the sealing liquid.

45 The casing *u* may be filled with liquid vaseline and the moisture carried by the gas condensed and the water collected in the dip.

The device operates in the following manner: If the gas is generated in a series of gen-

erator-chambers which are consecutively  
brought into action and passed through the pipes *f*, leading from the said generator-chambers to the housing *u*, this housing may be filled with an oil, liquid vaseline, if desired, or other suitable substance of greater specific  
55 gravity than the gas delivered by the generator and of less specific gravity than the water carried thereby. The pipes coming from the various generators dip into the said liquid, as will be seen from the drawing. The gas rises  
60 in the vaseline or other substance and accumulates in the top of the housing thereabove. The gas then passes out through the pipe *h* to the gas-main. The water condensed and extracted from the gas collecting in the dip  
65 or well *u'* will sink into the well, from which the gas-pressure will force it off through the pipe *a*, or, if preferred, the cock *v* may be employed, through which the said water may be let off from time to time.

70 From the foregoing description it will be seen that the gas may flow freely from any one of a series of generator-chambers or other source through the vaseline and pipe *h* to the gas-main, but that gas will be prevented from  
75 flowing from one generator-chamber to another owing to the dip of the various pipes *f f* into the seal, by which the said pipes are sealed up as regards each other.

The body of gas upon passing into the vase-  
80 line or other drier will be divided and more or less intimately mixed therewith, the moisture will condense and be thrown down, and the impurities carried therein by the gas will saturate the vaseline, which will precipi-  
85 tate the supersaturation with the water of condensation.

If the gas is produced from a source of varying pressure or from generation of gas-producing agents which gradually become ex-  
90 hausted, the pressure within the chamber will be variable and the precipitate of one passage of gas will be ejected from the apparatus upon the next passage of gas.

Having described my invention, I claim—  
95 1. As a means of relieving gas from moisture, the combination of a closed vessel; a permanent body of liquid vaseline therein; a



gas-inlet below the surface of the vaseline; a gas-outlet higher than the gas-inlet; and a water-outlet.

2. The combination of a chamber closed to atmospheric pressure; a permanent body of liquid therein having no affinity for either gas or water, the specific gravity of said liquid being less than that of water and greater than that of gas; means for passing moisture-laden gas into said body of liquid to condense the moisture and throw down the water of condensation; and means open to atmospheric pressure for removing the water of condensation from below the liquid body.

3. The combination of a closed chamber; a permanent body of liquid therein having no affinity for either gas or water, the specific gravity of said liquid being less than that of water and greater than that of gas; means for passing moisture-laden gas into said body of liquid; and means for passing water out of the chamber, open to atmospheric pressure, and communicating with the chamber at a plane below the plane at which the gas is passed thereinto.

4. The combination of a chamber closed to atmospheric pressure; a permanent body of liquid vaseline located within the chamber; a conduit for passing moisture-laden gas into the liquid vaseline, and having its mouth below the surface thereof; a conduit for removing water from the chamber having its opening from the chamber below the surface of the liquid vaseline and open to atmospheric pressure.

5. The combination of a chamber closed to atmospheric pressure; a permanent body of liquid vaseline located within the chamber; a conduit for passing moisture-laden gas into the liquid vaseline, and having its mouth below the surface thereof; a discharge-pipe operating as a stand-pipe having its opening below the surface of the liquid vaseline and open to atmospheric pressure.

6. The combination of a vessel closed to atmospheric pressure; a permanent body of liquid vaseline located within the chamber; a conduit opening at a point below the surface of the vaseline for passing moisture-laden gas thereinto; means communicating with the vaseline below the opening of the conduit and open to atmospheric pressure for removing moisture from below the vaseline.

7. The combination of a closed vessel; a permanent body of liquid vaseline therein; means for passing vapor-laden gas into the body of liquid vaseline; means for removing the gas from the vessel; and open automatic means for maintaining a hydrostatic balance within the vessel.

8. The combination of a vessel closed to the atmosphere; a permanent body of liquid, having no affinity for gas or water and of a specific gravity less than water and greater than gas; means for passing gas into said body of

liquid; means for passing the gas from the vessel; and means open to the atmosphere for discharging water from the vessel and producing a hydrostatic balance therein.

9. As a means for relieving gas from water-vapor carried thereby, the combination of a closed vessel; a body of liquid having no affinity for either gas or water but capable of removing water-vapor from gas, the specific gravity of said liquid being less than that of water and greater than that of gas and permanently abiding within the vessel; means for passing gas through said liquid to condense the vapor carried thereby into water; means for passing the gas from the chamber; and automatic means for removing the water of condensation from below the lower surface of said body of liquid.

10. As a means of relieving gas from moisture, the combination of a closed vessel; a body of liquid having no affinity for either gas or water but capable of removing moisture from gas, the specific gravity of the liquid being less than that of water but greater than that of gas and permanently abiding within the closed vessel; a gas-inlet below the upper surface of the body of liquid; a gas-outlet above the normal upper surface of the body of liquid; and a water-outlet from a point below the normal lower surface of the body of liquid.

11. The combination of a vessel closed to the atmosphere; a body of liquid having no affinity for gas or water but capable of removing water from gas, the specific gravity of said liquid being greater than that of gas and less than that of water and said body permanently abiding within the vessel; means for passing vapor-laden gas into the body of liquid; means for removing the gas from the vessel; and automatic means open to the atmosphere and communicating with the vessel below the lower surface of the body of liquid therein for maintaining a hydrostatic balance within the vessel.

12. As a means of relieving gas from moisture, the combination of a closed vessel; a body of liquid having no affinity for either gas or water but capable of removing moisture from the gas, the specific gravity of said liquid being less than that of water and greater than that of gas and permanently abiding within the closed vessel; a gas-inlet below the upper surface of such body of liquid; a gas-outlet higher than said gas-inlet; and a water-outlet below the level of the gas-inlet and its point of discharge above the level of the upper surface of said liquid.

13. As a means for relieving gas from water-vapor carried thereby, the combination of a closed vessel; a body of liquid having no affinity for either gas or water but capable of removing water-vapor from gas, the specific gravity of said liquid being less than that of water and greater than that of gas and per-

manently abiding within the closed vessel;  
means for passing gas through said liquid to  
condense the vapor into water; means for  
passing the gas from the vessel; and auto-  
5 matic means for removing the water of con-  
densation from below the lower surface of  
said liquid.

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

GEORGE GREGORY SMITH.

Witnesses:

HENRY HASPER,  
WOLDEMAR HAUPT.