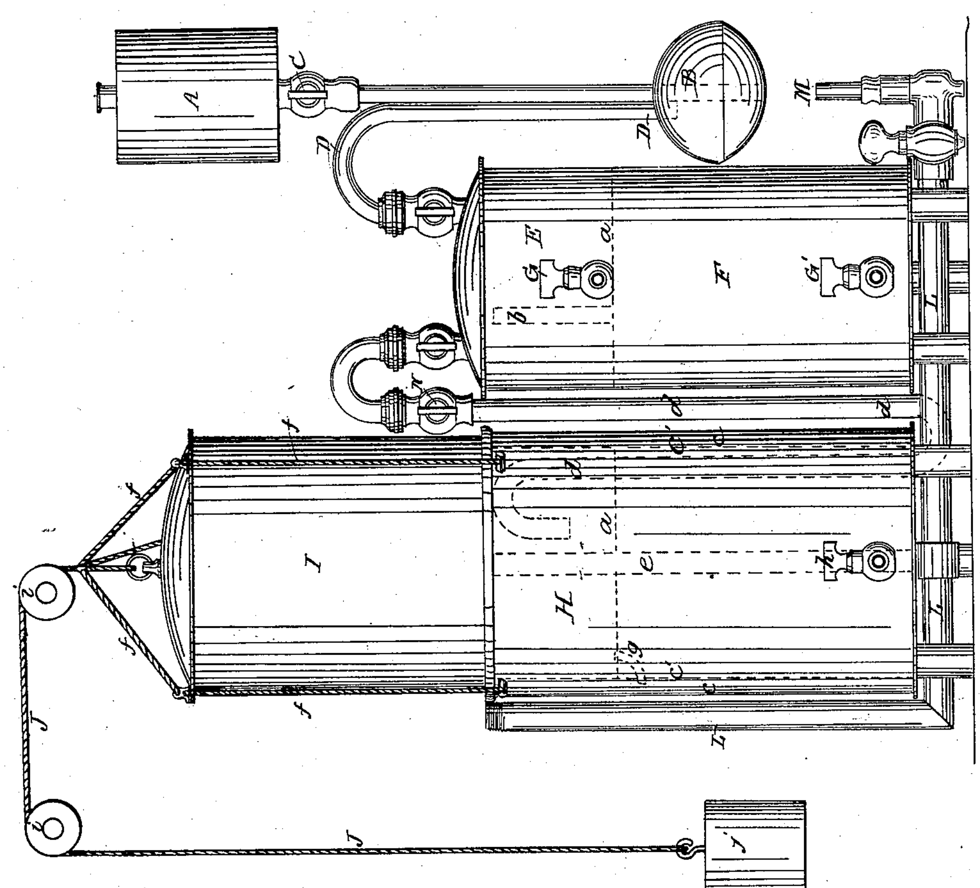
D. M. Graham,

Gas Apparatus.

No. 68,435. Patented Sep. 3, 1867.



Witnesses.

W. Burris

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United States Patent Office.

DAVID M. GRAHAM, OF EVANSVILLE, INDIANA.

Letters Patent No. 68,435, *dated September* 3, 1867.

IMPROVED GAS APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DAVID M. GRAHAM, of Evansville, in tht county of Vanderburg, and State of Indiana, have invented a new and useful Improvement in Gas Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which the figure in the drawings is a side elevation.

The nature of my invention consists in the construction of a portable family gas apparatus, whereby the gas generated from petroleum or other oil for illumination or for other purposes is refined and deodorized by means of three cylindrical vessels provided with suitable chambers containing water, and water impregnated with lime, as may be desired, forming a trio-hydrostatic gas-generator; the chambers and pipes being so arranged in the vessels, and the gas conveyed in such a manner through them as to obviate the necessity of using a large quantity of water, and consequent loss of gas from the expulsion of air from the same, in case where the single vessel or stand is used and full of water.

To enable any one skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the drawings, the red lines *a a* represent plates dividing the cylinders into chambers, the upper of which is intended for holding water. *b* is a pipe attached to plate open at the top and at the bottom through the plate. *c'* is an inner cylinder leaving a space or chamber, *c*, for holding water. *d* a continuation of pipe between the cylinders. *e* a pipe, communicating with lower main pipe under cylinders. A represents the tank containing petroleum or other oil from which gas may be made. The oil is admitted to the generating-chamber B by turning the key C. The oil as it is deposited on the bottom of the generator is converted into gas by the application of heat under the generator. The pipe through which the oil passes from the tank is carried to near the bottom of the generator, as will be seen in dotted lines, so that the gas as it ascends will be prevented from entering the pipe and thus into the tank, but will enter the pipe D and be conveyed to the chamber E containing water impregnated with lime, if desired, where it is deodorized and separated from any vapor or heavy oil, which vapor or oil will rest upon the surface of the water, and as the water will be even with the top of the pipe *b* in the chamber, the vapor or oil will be carried off the surface of the water through the pipe and be deposited in the chamber F below, where it may be drawn off by the cock G', after which it may be returned to the tank A and passed through a second time, or as often as may be desired, until the gas is all extracted therefrom. It then may be used for lubricating or for other purposes. After the gas leaves the deodorizing bath or chamber E it passes through a pipe, *d*, down to the bottom thereof and up into the inner cylinder *c'*, where it is discharged into the chamber H containing water which gives it the final cleansing. Rising from the water it enters the gasometer I and raises it until full, when it is held in check by the cordage *f* attached to the upper part of the outer cylinder and to the same of the gasometer, leaving about three inches of the lower part of gasometer in the water space *c* between inner and outer cylinder. This space is filled with water, and forms a water-joint to prevent the escape of gas from gasometer, and consequently explosion. There is a small tube, *g*, connecting the chamber H with the water-joint, so that by opening the cock *h* the water may be drawn off from both places.

To regulate the pressure of the gas upon the gasometer a cord, J, is attached at one end to the centre of the crown thereof, and connecting with cordage *f* attached to cylinder, and passed over pulleys *i i* attached to the ceiling of a house in which apparatus may be used, and the other end affixed to a weight, *j*, care being taken to give a little preponderance to the gasometer over the weight, which will be elevated or depressed in proportion to the pressure of gas upon it. The gasometer thus counterbalancing the weight will press the gas down through the pipe *e*, from whence it passes into the main pipe L under the cylinders, and thence into a distributing pipe which will connect at the end of main pipe and be distributed into the different rooms of the house for use. The generator is heated by the burner M connecting with main pipe L. It not only supplies the gas for illuminating purposes, but supplies the burner at the same time for heating the generator. There will always be a sufficient quantity of gas in the apparatus after it has been once started to supply the burner thereafter, when the flame has been extinguished and it is desired to renew it again for the generation of more gas. This

principle will be found to be more fully set forth in Letters Patent granted me May 9, 1865, and when taken in connection with the refining and deodorizing-chambers, whereby an improvement is made in the gas from petroleum as well as producing oils that may be used for other thaa illuminating purposes, and the apparatus being light, portable, and simple in all its parts will be quite a desideratum for family purposes generally. When the gas has reached the last chamber H it will be prevented from receding to the first chamber E by closing the cocks G′ and N.

The apparatus is so constructed that it may be separated and transported to any desired place and yet retain the gas. It will be observed that by opening the cock G′ air will be admitted to the chamber F, and the oxygen from it passing through the pipe *b* into the chamber E, above, will be incorporated with the carbon from the gas or oil, and the hydrogen from the water, which will improve the quality as well as the quantity of gas. The cock G is for the purpose of drawing off the water from the chamber.

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

1. The construction of a portable gas apparatus with refining and deodorizing-chambers, substantially in the manner and for the purpose as herein set forth.

2. The introduction of air into the deodorizing-chamber E by means of the stop-cock G′, substantially in the manner and for the purpose as herein set forth.

3. The combination of the tank A, generator B, and burner M, with the refining and deodorizing-chambers, substantially in the manner and for the purpose as herein set forth.

4. The arrangement of the tank A, generator B, chambers E and F, stop-cocks G′ and G, pipe *b*, pipe *d*, inner cylinder *c*, chamber H, pipe *e*, gasometer I, main pipe L, and burner M, substantially in the manner and for the purpose as herein described.

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Witnesses:

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J. A. SHOLES.