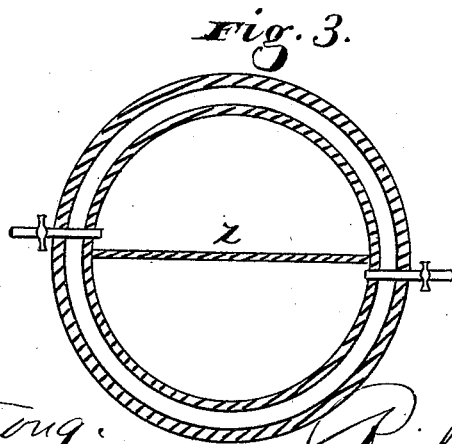
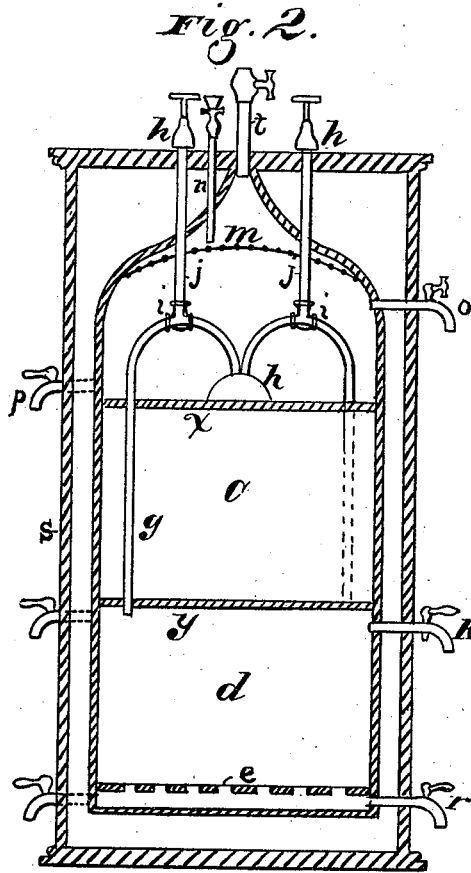
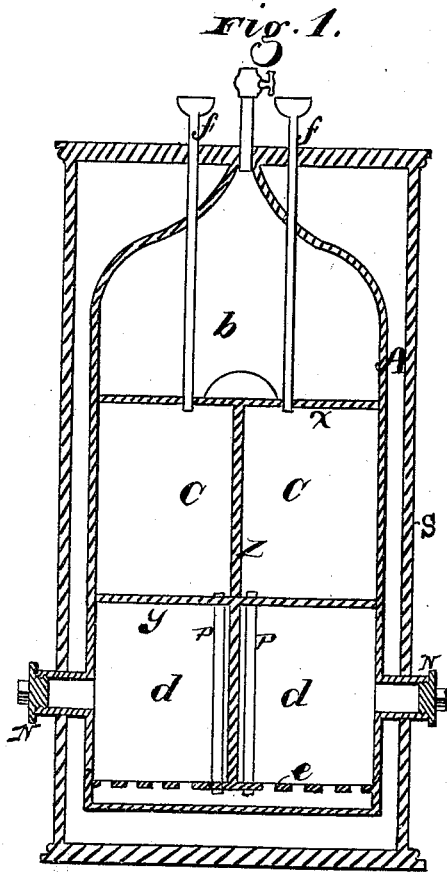


R. DEAN.  
GAS APPARATUS.

No. 181,418.

Patented Aug. 22, 1876.



Witnesses  
*Geo. H. Strong.*  
*Jno. L. Boone*

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# UNITED STATES PATENT OFFICE.

RICHARD DEAN, OF VIRGINIA CITY, NEVADA.

## IMPROVEMENT IN GAS APPARATUS.

Specification forming part of Letters Patent No. **181,418**, dated August 22, 1876; application filed July 13, 1876.

*To all whom it may concern:*

Be it known that I, RICHARD DEAN, of Virginia City, Storey county, State of Nevada, have invented an Improved Gas Apparatus; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to that class of gas-machines in which hydrogen gas is first generated, and then enriched by passing it through a hydrocarbon; and my improvement consists in certain novelties in construction, as herein-after set forth and specifically claimed.

Referring to the accompanying drawing, Figure 1 is a vertical section taken transversely to Fig. 2. Fig. 2 is a vertical section taken transversely to Fig. 1. Fig. 3 is a horizontal section.

A is an upright cylindrical case or shell, the interior of which is divided into a carbureting-chamber, *b*, acid-chambers *c*, and generating-chambers *d*, by means of upper and lower diaphragms *x y* and a central vertical partition, *z*, which rises from the bottom of the case to the upper diaphragm *x*, which constitutes the division between the carbureting and acid chambers. The gas-generating chambers *d d* have strainers or false bottoms *e* and suitable side doors *N N*, with screw-caps, through which they are supplied with a quantity of iron turnings. The acid-chambers *c c* are supplied with dilute acid through pipes *f*, which pass upward through the top of the case, and terminate in funnel-shaped cups. The carbureting-chamber is connected with generating-chambers by pipes *g g*, which open at their upper ends under a cup, *h*, for the purpose of spreading the gas. These pipes have stop-cocks *i*, operated by rods *j*, in order to admit the flow of gas from either generator, which will be found necessary in case either generator is closed for the purpose of either refilling or cleaning. The generating-chambers are furnished with cocks *k*, for the escape of air when the generators are first supplied with acid from the acid-chambers. Pipes *P P* allow communication between the

acid-chambers *c c* and generating-chambers *d d*. After the generator or generating-chambers have been charged, the solution will be forced more or less back into the acid-chambers through the feed-pipes *P P*, according to the pressure of gas generated, thereby automatically regulating the supply.

The carbureter is provided with a sponge, which is held in place by a perforated diaphragm, *m*, and saturated with hydrocarbon oil, which is introduced into the chamber through a pipe, *n*. *o* is a stop-cock, by which an excess of oil in the carbureter may be detected, and *p* is a pipe for drawing off the same. The spaces between the perforated bottoms of the generating-chambers and the bottom of the case are provided with stop-cocks *r*, for the purpose of drawing off sediment and cleansing the apparatus.

I surround the case A with an outer protecting case or jacket, S, sufficient space being left between the two for a packing of charcoal or other suitable non-conducting substance, which will effectually prevent any obstruction arising from freezing. This protecting-case may be made of wood, iron, or equivalent or suitable material, and is arranged to inclose the entire case A. The stop-cock *t*, for connection with the pipe of a dwelling or other place to be supplied with gas, and also the several other cocks hereinbefore described, are all arranged upon the exterior of case S, and connect with their respective compartments, substantially as shown.

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

In combination with the case A, provided with the hereinbefore-described arrangement of carbureter and generators, the protecting-case S, with a sufficient space between the two cases for a non-conducting substance, substantially as specified.

In witness whereof I have hereunto set my hand and seal.

RICHARD DEAN. [L. s.]

Witnesses:

ROBT. E. LOWERY,  
THOS. TRACEY.