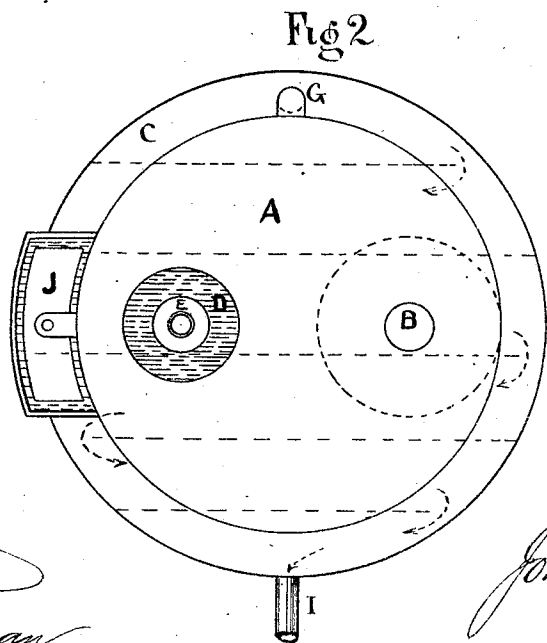
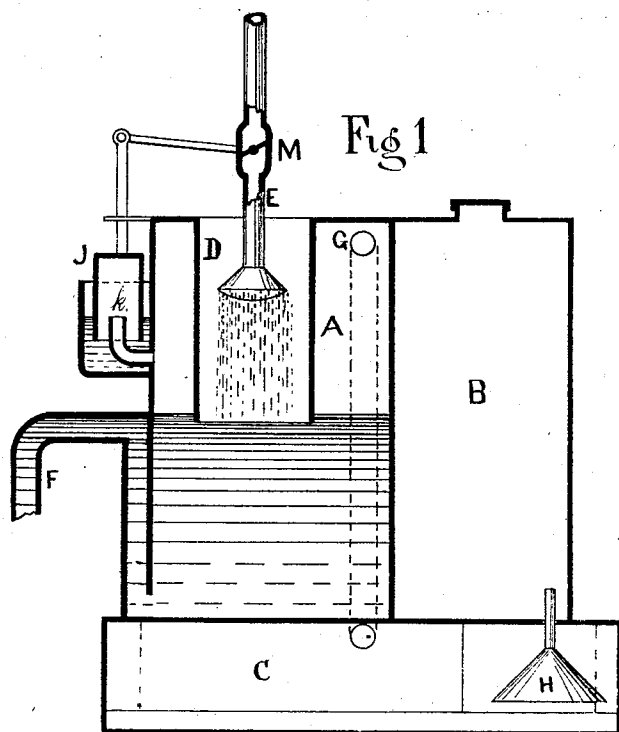


J. C. HENDERSON.  
Gas-Machine.

No. 159,179.

Patented Jan. 26, 1875.



Witnesses.

*J. E. L. Monteverde,*  
*R. M. Wakeman*

Inventor.

*John C. Henderson*

# UNITED STATES PATENT OFFICE.

JOHN C. HENDERSON, OF SAN FRANCISCO, CALIFORNIA.

## IMPROVEMENT IN GAS-MACHINES.

Specification forming part of Letters Patent No. 159,179, dated January 26, 1875; application filed October 13, 1874.

*To all whom it may concern:*

Be it known that I, JOHN CARLOS HENDERSON, of San Francisco, in the county of same name, in the State of California, have invented certain Improvements in Gas-Machines, of which the following is a specification:

My invention relates to that class of machines in which is used gasoline, naphtha, or any volatile oil of petroleum, &c., for the production of illuminating-gas or carbureted hydrogen. My invention particularly relates to those machines in which a current of air is used for producing the pressure to circulate the vapors of the volatile oil used, either by passing the air-current over the fluid, or by passing it through any porous substance saturated with it the air thus treated will become charged with the gas and become ready to be ignited; and it consists in the combination of devices hereinafter described and explained, whereby a positive and constant vertical flow of water directly into the tank is secured, thereby securing an even and constant flow of gas from the machine.

To describe my invention fully, reference is made to the accompanying drawing forming part of this specification.

Figure 1 is a sectional elevation of the machine embodying my invention. Fig. 2 is a plan of the same.

The charging of the current of air with the volatile gases or fumes issuing from the gasoline or other oils used is, in my machine, accomplished by the use of what is known as the "hydrostatic column," being the discharging of a column of water inside of a tube or pipe of a much larger diameter than that through which the water flows, thus leaving an annular space around the discharge of water, by which it forces along or absorbs a certain amount of the surrounding air, forming a current more or less strong, in proportion to the force of the water-current itself. I either use a common jet or spray, or even a pipe with perforations in its sides, through which the air is sucked and forced down by the current of water, any of these devices answering the purpose for which I apply them—that of producing a current of air. It is by these means I produce the gas in my machine.

Referring to the drawing, A is the main tank, into which the water is discharged and the air stored up. B is the gasoline reservoir or tank. C is the carbureter. D is the pipe, in the center of which the water-column E discharges. F is a siphon-pipe, keeping the level of the water in the tank A to the desired height. G is pipe admitting the air into the carbureter. J is an equalizer or governor. As before said, the water discharged in the center of tube D from the pipe E will produce a current of air. This air is forced under the lower edge of tube D, which, being always kept slightly immersed in the water of tank A by means of the pipe F, prevents it from flowing outward again, but passes through tube G into the carbureter, thence through pipe I to the burners, having, in its passage through the carbureter, become charged with gas.

The carbureter may be made in any manner and of any suitable material, that being preferred which gives the largest surface of exposure, to more thoroughly charge the air-current with gas.

The supply of gasoline or other oil used is, in my machine, regulated automatically by the float-valve H, shutting off the supply when a sufficient quantity has been admitted from the reservoir into the carbureter.

The pressure of the air in tank A is equalized or regulated by the governor J, which consists of a hollow vessel of any suitable shape, but closed on all sides except at the bottom, and placed with its open side downward into a small reservoir containing water placed at the side of main tank A, or in any convenient place for its working. This inverted vessel is connected with the air-space in tank A by means of a small pipe, k, passing upward through and above the level of the water in the smaller tank. The governor J also connects, by means of levers or other suitable appliances, with the regulating-valve M in pipe E.

If the air-pressure in tank A becomes too great, the cup or vessel J is pushed upward, thereby lessening, and even entirely closing up, the supply of water, and naturally lessening, also, the supply of air. When the pressure sinks too low it affects the governor in a contrary way, admitting more water, thereby

increasing the supply of air, and vice versa. By these means an even and steady current of air is produced, giving what is absolutely essential in the burning of gas—a steady and clear light at the burner.

Having thus fully described my invention, I claim and desire to secure by Letters Patent—

In a gas-machine, the large pipe D and the small interior pipe E, provided in its upper

portion with the regulating-valve M, in combination with the tank A, provided with the overflow-pipe F, and governor J, substantially as and for the purpose set forth.

JOHN C. HENDERSON.

Witnesses:

F. E. MONTEVERDE,

R. W. WATERMAN.