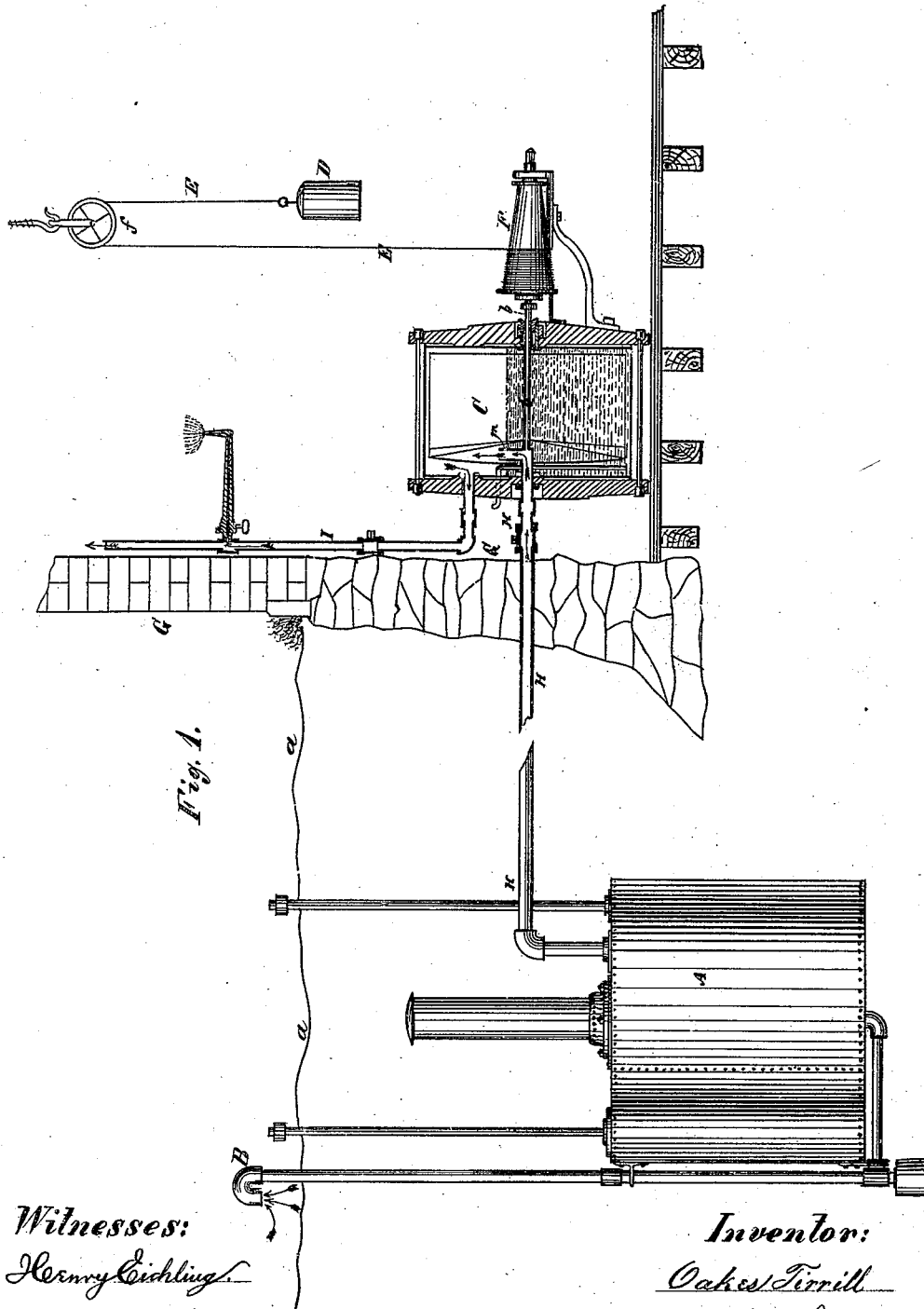


O. TIRRILL.  
CARBURETER.

No. 181,544.

Patented Aug. 29, 1876.



Witnesses:  
*Henry Cichling*  
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# UNITED STATES PATENT OFFICE.

OAKES TIRRILL, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **181,544**, dated August 29, 1876; application filed March 20, 1876.

*To all whom it may concern:*

Be it known that I, OAKES TIRRILL, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Gas-Machines or Air-Carbureters, of which the following is a specification:

This invention relates to that class of gas-machines or air-carbureters in which the carbureting apparatus is placed outside of the building to be supplied with gas, and at a greater or less distance therefrom, while the air-moving mechanism is situated within the said building. In this class of gas-producing machines it has, previous to my invention, been the practice to cause the air to pass into the pump, thence to force it to the carbureter through one pipe, and, after the carbureting of the air, to return it to the building through a second pipe, from which it is distributed to the burners, the first-named pipe (the air-pipe) being frequently fitted with a stop-valve, to prevent the back pressure of inflammable vapors or carbureted air to the pump, and force the same into the atmosphere within the building. If such stop valve gets out of order, or if it be dispensed with, the inflammable vapors brought into the atmosphere of the building are liable to catch fire, explode, and induce conflagration. If the valve is retained, it, together, with the duplicate pipes, involves expense at the outset, and oversight to prevent derangement during the term of its use. The object of my invention is to avoid either and all of these objections by providing a gas-machine of the class hereinbefore particularized, the air-moving mechanism of which shall draw the carbureted air direct from the carbureting apparatus, without first supplying the air from said mechanism to said apparatus, thereby dispensing with the air-pipe of the ordinary gas-machines of the class specified, which shall effectually guard against the egress of carbureted air to the atmosphere within the building, and in which any accumulation of pressure within the carbureting apparatus or the air-moving mechanism shall be relieved without the aid of special appliances by the outflow of surplus vapor to the atmosphere external to the building. To this end my said invention consists in a novel

combination of a hermetically-closed wet-meter wheel, located within the building to be supplied with gas, and fitted with a suitable gas-delivery pipe or pipes and carbureting apparatus, provided without, and at a greater or less distance from the building, and constructed with an air-pipe, securing air from the atmosphere external to the building, the aforesaid hermetically-closed wet-meter wheel being connected with the said carbureting apparatus by a single pipe, and the carbureting apparatus receiving its air direct from the atmosphere external to the building by means of a suitable inlet-pipe, open to ingress by said external atmosphere.

The drawing is a vertical sectional view, representing my invention as applied to use, the air-moving mechanism being within the building to be supplied with gas, the air-carbureting apparatus being wholly without and apart from said building.

A is the carbureting apparatus, which, in its general construction, may be of any approved or suitable variety. It is sunk or embedded below the surface *a* of the ground to the same depth, and in substantially the same manner usual with gas-machines of the special class to which this, my improvement, relates, the carbureting apparatus A, however, being provided with the air-inlet pipe B, which extends to or above the surface *a*. The apparatus A, it must be distinctly understood, is situated outside of the building to be supplied with gas, and at a greater or less distance therefrom. The air admitted to the carbureting apparatus A, is, therefore, taken direct from the atmosphere outside the building aforesaid. C is a wet-meter wheel, supplied with the quantity of water or other non-volatile liquid usual in a wet-meter, but the rotatory inner mechanism of which receives a continuous rotary motion from a weight, D, acting through a cord, E, pulley *f*, and a drum, F, the latter attached to the shaft *b* of the meter-wheel. This meter-wheel is placed within the building to be supplied with gas, the outer wall of said building being represented at G. The meter-wheel C connects with the carbureting apparatus A by the single pipe H. The wet-meter wheel is provided

with the delivery-pipe I, through which the gas passes to the distributing-pipes, which convey it to the burners.

It is to be understood that the term wet-meter wheel as used in this specification includes not only the rotatory inner portions of the air-moving apparatus, but also the hermetically-closed shell or casing of the same, and the non-volatile liquid contained therein, and essential to the operation of the same.

In the operation of the invention the wet-meter wheel C causes by its action a partial vacuum within that portion of the same immediately connecting with the pipe H, and of course a corresponding partial vacuum in the carbureting apparatus A. This causes the external air (by its own or atmosphere pressure alone) to enter the carbureter, and being therein carbureted or charged with the vapors of the naphtha or other carbonizing-liquid is passed through the pipe H into the meter-wheel C, and thence discharged to the delivery-pipe I, from which, through suitable branch pipes, it may be distributed to the burners.

It will be observed that the wet-meter wheel C is hermetically closed or sealed against any communication with the atmosphere within the building in which said meter-wheel is placed, as hereinbefore explained, and consequently that no escape of the carbonized air or vapor of the hydrocarbon used for carbonizing can escape into the atmosphere within said building; moreover, that no portion whatever of the liquid hydrocarbon used for carbonizing is permitted to come within the building aforesaid; furthermore, that any increased pressure within the meter-wheel C (as from an increase of temperature within the building or other cause) simply relieves itself by forcing the excess of vapor back through the pipe H to the carbureting apparatus A, and out through the pipe B to the atmosphere external to the building.

It will be seen that by this means all danger of the introduction of inflammable vapors to the atmosphere within the building is effectually provided against, while at the same time the duplicate pipes and the stop-valve used in other gas-making machines of the class to which my invention relates are dispensed with. It must also be borne in mind that, whereas

in the gas-machines of the class referred to, previous to my invention, the air has been taken by the air-moving mechanism from within the building, thence conducted to the carbureting apparatus, and then returned to the building, so that any regurgitation from the carbureting apparatus through the air-pipe carried the expulsion of inflammable vapors into the atmosphere within the building, my said invention draws the air primarily from the atmosphere external to the building, and after carburation passes it to the meter-wheel hermetically closed, as hereinbefore explained, from which, through the pipe I, it is distributed to the branch pipes that lead to the burners, it being impossible for any inflammable vapor to escape into the atmosphere within the building.

In order to prevent any otherwise possible accumulation of the liquid hydrocarbon used for carbureting from accumulating within the meter-wheel, an opening, *m*, is provided in the inwardly-projecting end of the pipe H, so that any such liquid (for example, that resulting from the condensation of vapors in the pipe I may flow into the said pipe H back to the carbureting apparatus A, as also any surplus water in the meter, which will be conducted off to the carbureting apparatus A. K is a trap to receive any condensation of moisture from the outside atmosphere into the carbureter. Of course, in order to insure this removal of superfluous liquid from the meter-wheel, the pipe H must have a slight descent or incline toward the apparatus A, the latter being at a lower level than the meter-wheel.

What I claim as my invention is—

In a gas-machine or air-carbureter, of the class herein indicated, the hermetically-closed wet-meter wheel C, located within the building to be supplied with gas, and provided with the delivery-pipe I, in combination with the carbureting apparatus A, located outside of the building, and connected with the aforesaid meter-wheel by the single pipe H.

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Witnesses:

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