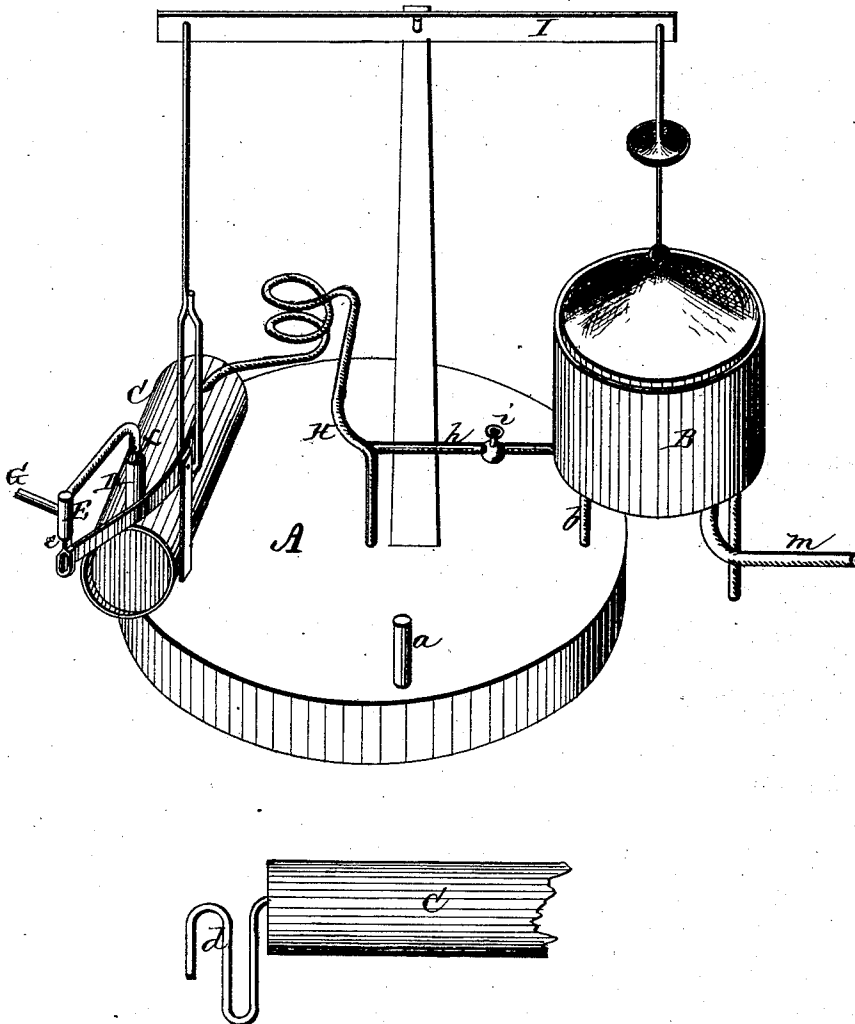


A. C. RAND.
Carbureters.

No. 155,974.

Patented Oct. 13, 1874.



WITNESSES
Francis L. Durand
Chas. L. Evers

INVENTOR
Alonso C. Rand,
per *Charles Mason*
Attorneys

UNITED STATES PATENT OFFICE.

ALONZO C. RAND, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **155,974**, dated October 13, 1874; application filed August 12, 1874.

To all whom it may concern:

Be it known that I, ALONZO C. RAND, of Minneapolis, in the county of Hennepin and in the State of Minnesota, have invented certain new and useful Improvements in Carbureters; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a carbureter, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, which represents a perspective view of my machine.

A represents the carbureter, with supply-pipe *a* for filling the same. B is the gas-holder, connected with the carbureter by a pipe, *b*. C is the hydraulic main, with overflow-pipe *d* at one end. D is the air-inlet into the main C. E is the injector, and G the inlet for steam into the injector. H is a coil-pipe leading from the hydraulic main C to the carbureter A. I is walking-beam for operating the injector-valve *e* from or by the rising and falling of the gas-holder. *h* is a pipe, with stop-cock *i*, connecting the condenser H with the pipe *b*. *m* is the pipe from the gas-holder to the burners.

The gas-machines heretofore in use, where steam is used as an air-injector, have been faulty in that they have permitted the condensation from the steam to run into the carbureter and gorge the capillaries with water to the exclusion of the gasoline. By my machine this is entirely prevented, and better results obtained.

The operation is as follows: The carbureter having been filled with material, or nearly filled, the steam is let on, and in passing out of the contracted nozzle *a*, which enters the air-inlet D in the hydraulic main, a current of air is induced and carried with the steam into the water, driving it out of said air-inlet. The steam is nearly all condensed by this means, but in order to prevent any passing into the carbureter, I send it through

a condensing-coil, H. From thence it passes into the carbureter A, which is provided with a spiral passage lined with flannel. From the carbureter it passes upward into the gas-holder, which ascends, and when it reaches its maximum height closes, by the use of the lever walking-beam I, the steam-valve *e*, and the production of gas ceases. This gives an intermission in the operation; or, in other words, it is not continuous, so that the heat lost by the evaporation of the gasoline is restored while the holder full of gas is burning.

Now, when the holder shall have descended to its lowest point, the lever walking-beam opens the steam-valve, and the production of gas commences. Thus it works on uninterruptedly as long as any material remains in the carbureter, and so long as steam is kept up in the boiler the machine will take care of itself, nothing having to be done except to turn on the gas-burners.

It will be noticed that when the water is driven away from the air-inlet D by the current of air and steam, it returns up the pipe, when the process stops and seals off the gas, the same as the hydraulic main in an ordinary gas-works, except that the inlet is entirely open to the air, and yet the gas cannot get back or leak out.

The connecting-pipe *h* and cock *i* are used when the gas is too rich. By opening the cock air will pass into the holder and not get into the carbureter.

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

1. The combination of the hydraulic main C, air-inlet pipe D, steam-injector E, and the condensing-coil H, whereby a current of air is drawn by the steam into the hydraulic main, and thence into the condensing-coil, substantially as set forth.

2. The combination of the injector and hydraulic main, with the condensing-coil, carbureter, and diluting pipe and cock, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of August, 1874.

ALONZO C. RAND.

Witnesses:

ALFRED J. DEAN,
ROBT. McMULLEN.