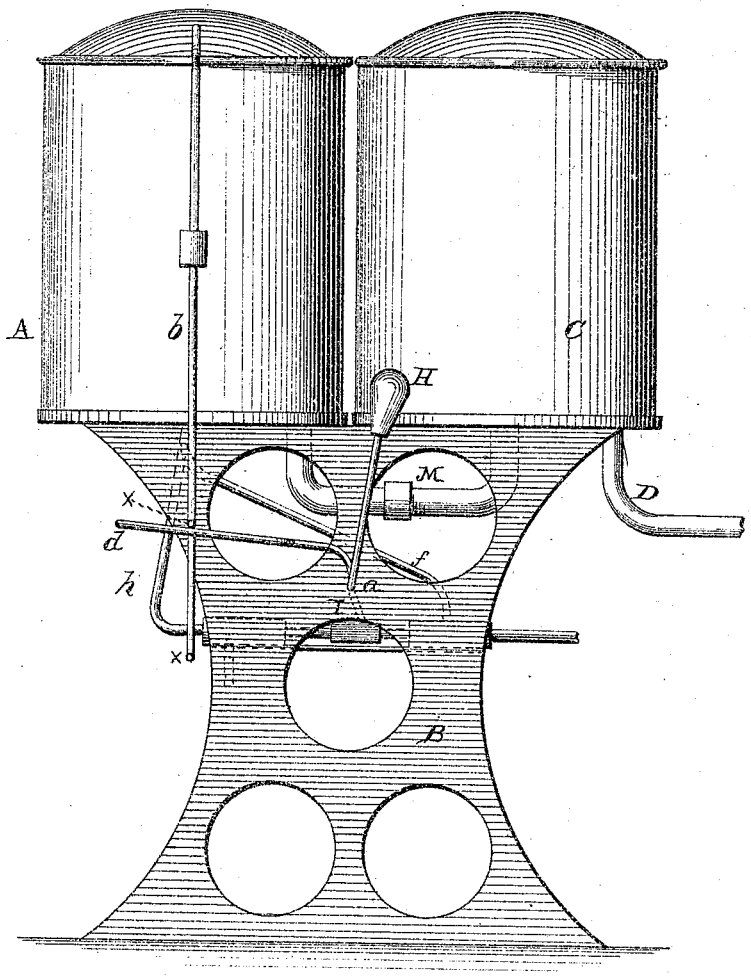
2 Sheets—Sheet 1.

A. C. RAND.

GAS-MACHINE.

No. 181,204 Patented Aug. 15, 1876.

Fig. 1



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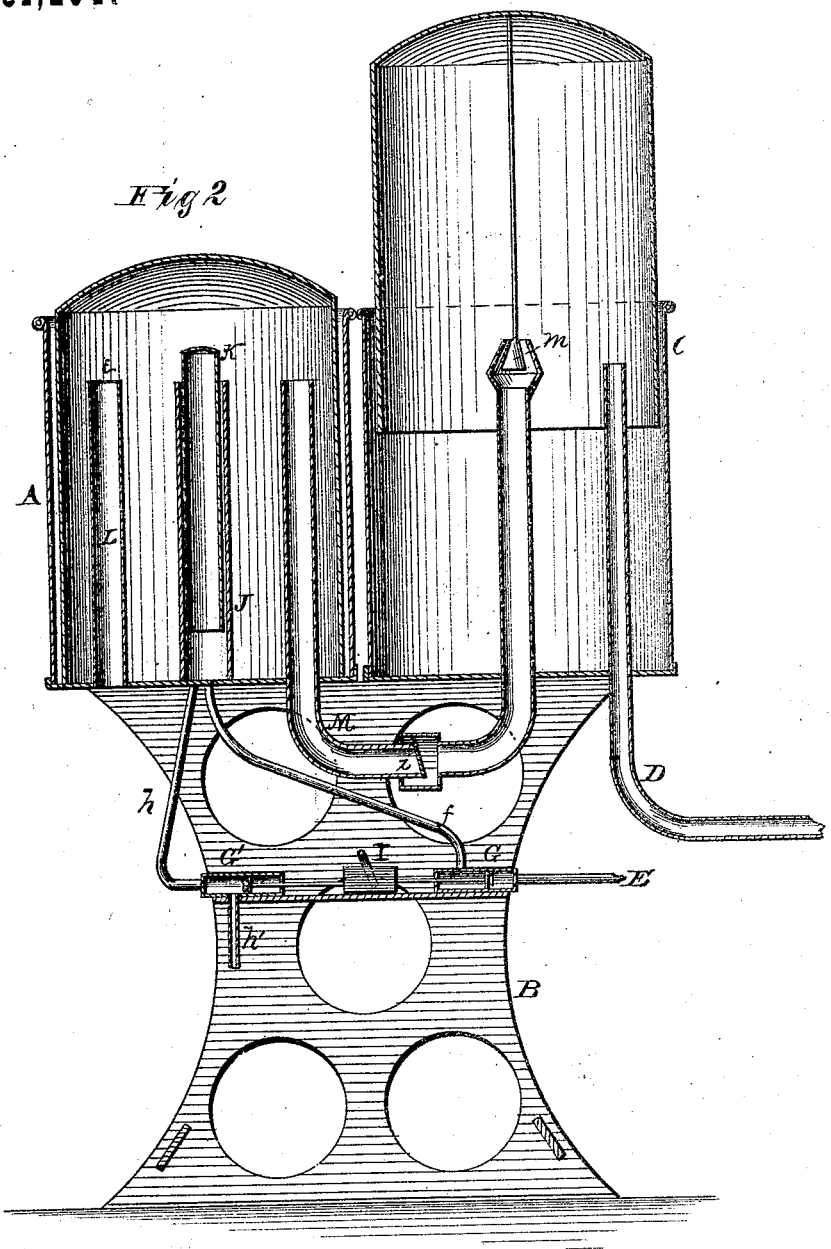
2 Sheets—Sheet 2.

A. C. RAND.

GAS-MACHINE.

No. 181,204. Patented Aug. 15, 1876.

Fig 2



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UNITED STATES PATENT OFFICE.

ALONZO C. RAND, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN GAS-MACHINES.

Specification forming part of Letters Patent No. 181,204, dated August 15, 1876; application filed May 29, 1876.

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 Gas-Machines; 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 an apparatus for furnishing air to carbureters for gas-manufacturing, and any other purpose where a constant pressure of air is required, 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 drawings, in which—

Figure 1 is a side elevation of my machine. Fig. 2 is a vertical section of the same.

A represents the air-pump, constructed like an ordinary gravitating gas-holder, and placed on a suitable frame-work, B. C is the receptacle for the air, also constructed like an ordinary gas-holder, and provided with the pipe D, leading to the carbureter. E is the supply water-pipe. G G′ are valves regulating the supply and exhaust, respectively, of the water. H is a pivoted tilting weight, connected to a shaft, *a*, one end of which projects into a cross-head, I, that connects the stems of the two valves G G′. This tilting weight is operated by the air-pump A, to the upper edge of which is attached a rod, *b*. The lower end of this rod enters a slotted arm, *d*, attached to the shaft *a*. The rod *b* is provided with two pins, *x x*, which impinge upon the arm *d* as the holder ascends and descends, so that when the weight is carried past the center it drops by its own gravity, and opens the supply-valve G full, and closes tight the exhaust G′, or vice versa. When the supply-valve G is open the water passes through a pipe, *f*, underneath the air-pump into the bottom of a cylinder, J, placed in the center on the bottom of the pump, and in said cylinder the water acts against the lower end of a piston, K, placed therein. The cylinder J being open at its upper end, the piston or piston-rod passes up through it, and comes in contact with the under side or top of the holder with sufficient force or power to lift the same. L is the air-inlet pipe within the pump, provided with a valve, *e*, at its upper end. As the holder ascends air is supplied through the pipe L, the valve *e* preventing the return of the air, and when the holder has attained its maximum height it actuates the tilting weight, thereby closing the supply-valve and opening the exhaust or waste valve, the waste-water escaping through the pipes *h h′*. The weight of the holder or pump A should be greater than that of the receptacle or holder C, and therefore the air is then forced through a pipe, M, from the pump into the holder, said pipe M being provided with a check-valve, *i*, as shown.

In order to prevent an increased pressure of air in the holder C, or, in other words, to preserve a uniform pressure therein, the upper end of the air-inlet pipe M within the holder is provided with a conical valve, *m*, the stem of which is attached to the crown of the holder, so that when the holder has nearly reached its maximum height the conical valve partially closes the inlet, which is entirely closed when the holder has reached its full height. As soon as the holder of the pump A has descended to its lowest point the tilting weight is thrown over to the other side, closing the exhaust and opening the supply valve, when the water again enters the cylinder J and operates as before.

Thus a constant and uniform blast of air is furnished the carbureter, a very few gallons of water being sufficient to furnish an ordinary-sized dwelling with gas an entire evening.

This machine can be constructed at a comparatively small expense. It is automatic, not having to be wound up, and therefore there is no danger of running down while the lights are burning, which is often the case with other machines made for a like purpose. Its parts are so simple that it is not liable to get out of order. Though specially designed for furnishing air to carbureters, it may equally as well be used for any and all purposes where a moderate blast of air is required.

The water-cylinder J may be operated outside of the pump, the holder of the pump be

ing lifted by a lever connected with the piston in the cylinder.

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

1. The combination of the gravitating pump or holder A, water-supply E, valves G G′, cross-head I, shaft *a*, with tilting weight H and slotted arm *d*, and the rod *b*, attached to the holder and provided with pins *x x*, substantially as and for the purposes herein set forth.

2. The combination of the pump or holder A, water-supply E, valves G G′, pipe *f*, cylinder J, piston K, and waste or exhaust pipes *h h′*, substantially as and for the purposes herein set forth.

3. The combination of the air-pump A, water-cylinder J, with piston K, air-inlet pipe L, with valve *e*, pipe M, with valves *i* and *m*, and holder C, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of May, 1876.

ALONZO C. RAND.

Witnesses:
W. W. RAND,
W. P. MORGAN.