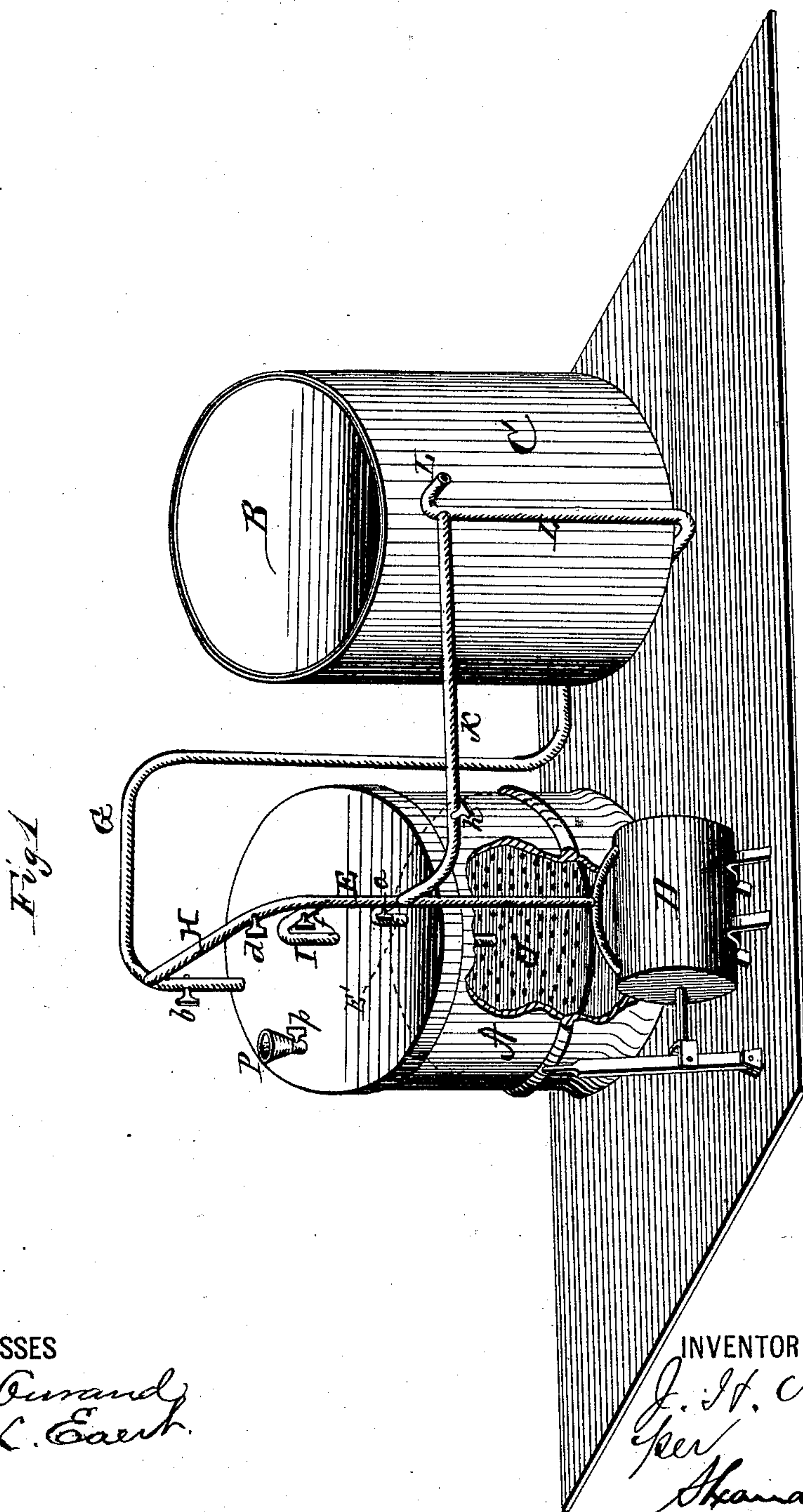


**J. H. NEEDLES.**

## Air Carbureting Gas-Machines.

No. 157,861.

Patented Dec. 15, 1874.



**WITNESSES**

H. L. Burdick  
C. L. East.

INVENTOR

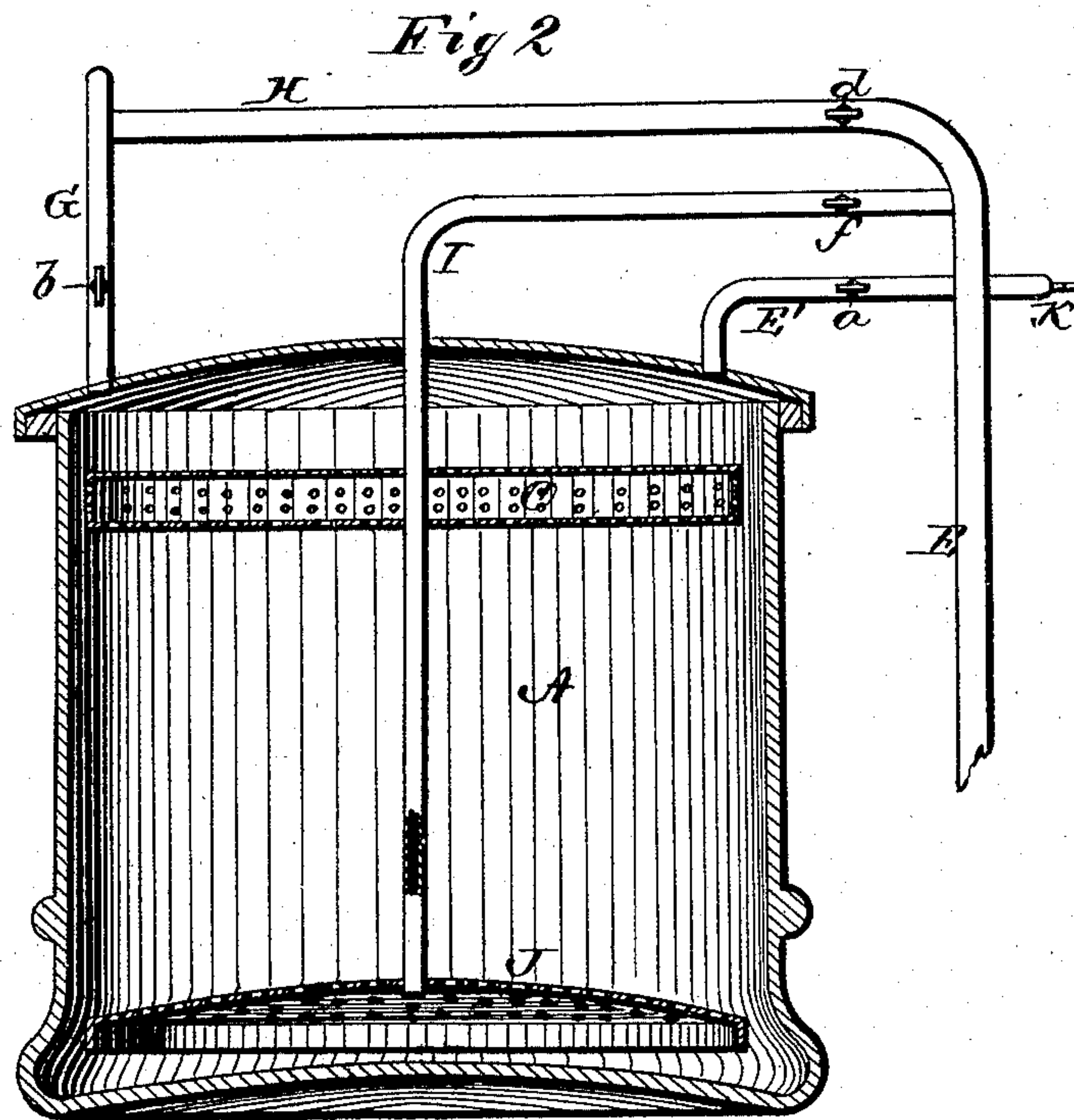
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WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES H. NEEDLES, OF NASHVILLE, TENNESSEE.

## IMPROVEMENT IN AIR-CARBURETING GAS-MACHINES.

Specification forming part of Letters Patent No. **157,861**, dated December 15, 1874; application filed August 18, 1874.

*To all whom it may concern:*

Be it known that I, J. H. NEEDLES, of Nashville, in the county of Davidson and in the State of Tennessee, have invented certain new and useful Improvements in Air-Carbureting 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 the construction and arrangement of a machine for manufacturing illuminating-gas from gasoline or other light hydrocarbon liquids, 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 perspective view of my entire machine, and Fig. 2 is an enlarged vertical section of the gasoline drum or holder.

A represents the gasoline drum or holder; B is the gasometer or gas-holder, and C is the water-tank for the same. Where the machines are built large, the water-tank will be a cistern, but ordinarily it is made of sheet-iron, and set above ground. D represents the air-pump or engine, to be worked by hand or propelled by power, either steam, water, or air, or any other kind of power. When thus worked by power, it is to be built like an engine with all its bearing.

The air-pump D is, by pipes E and E', connected with the top of the gasoline-tank A, and in said pipe E' is a stop-cock, *a*. G is a pipe connecting the top of the gasoline-tank A with the gas-holder, and this pipe is also provided with a stop-cock, *b*. The two pipes E and G are, above the stop-cocks *a* and *b*, connected by a pipe, H, in which is a stop-cock, *d*. From the pipe E, above the stop-cock *a*, a pipe, I, leads downward into the gasoline-tank A, through and below a perforated diaphragm, J, in the same. This pipe I is provided with a stop-cock, *f*. K is a pipe leading directly to the main or pipe L from the pipe E, and is provided with a stop-cock, *h*. The pipe L should also be provided with a

stop-cock, to control the flow of the gas from the gasometer.

The tank A is filled through a funnel, P, with a stop-cock, *p*, in the pipe of the funnel connecting it with the tank.

To make gas, the tank C is filled with water, and the drum A is filled about half-full of gasoline. All the cocks being supposed to be closed, the stop-cocks *a* and *b* are opened, and the pump worked, when the air will pass in through the pipes E E' over the gasoline, and take up the vapor or gas that accumulates in the vacuum above the gasoline. It then passes through the pipe G into the gasometer B, when it is ready for use, and then, by opening the stop-cock in pipe L, said gas will pass through the pipe L out into the building, or where desired for consumption.

But if by this process the gas is not rich enough to make a good, strong, brilliant light, the cock *a* is closed and the cock *f* opened, when the air will pass through the pipe I to near the bottom of the drum or tank A, and then be spread and pass through the perforated diaphragm or distributor J up through the gasoline, thus becoming converted into rich gas, which passes through the pipe G into the gasometer ready for use, as above described.

If it should be found that the gas is too rich and likely to smoke when burned, after it is in the gasometer B, the cocks *a*, *b*, and *f* are closed and the cock *d* opened, when the pure air will pass through the pipes E, H, and G into the gasometer, reducing the gravity of the gas to any degree desired, thus controlling the gas as fully in the vapor as in the liquid form.

In the top of the gasoline drum A is a wire-gauze screen, O, which is to be filled with cotton, to keep the gasoline from passing into the pipes in liquid form.

The stop-cock *h* may be opened to enrich the gas, by letting the rising vapor or gas from the gasoline drum pass out into the consumption-pipes, without the aid of any other agencies.

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

1. The combination of the drum A, provided with perforated diaphragms O and J,

pipe I, air-pump D, pipe E, pipe G, and gas-ometer B C, all substantially as set forth.

2. The combination of the drum A, diaphragms O and J, air-pump D, pipes E E', pipe K, and pipe L, with their stop-cocks, all constructed substantially as set forth.

In testimony that I claim the foregoing I

have hereunto set my hand this 5th day of August, 1874.

JAMES HENRY NEEDLES.

Witnesses:

I. B. WEAVER,  
J. W. JACKSON.