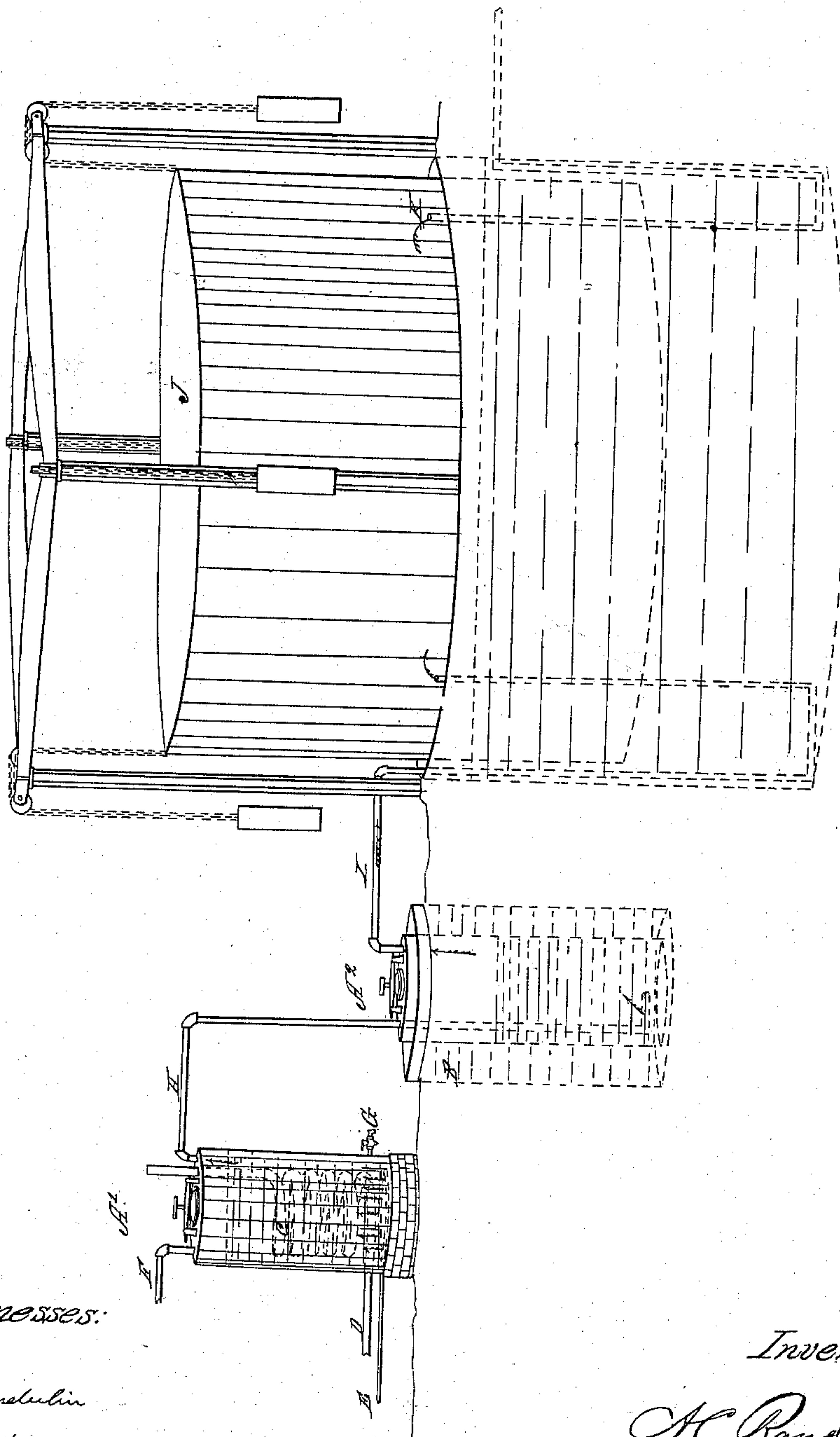


A. C. RAND.
 METHOD OF MAKING ILLUMINATING GAS.
 No. 66,041. Patented June 25, 1867.



Witnesses:

E. D. Pennington
 C. N. Thomas

Inventor:

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UNITED STATES PATENT OFFICE.

ALONZO C. RAND, OF UNION MILLS, PENNSYLVANIA.

IMPROVED METHOD OF MAKING ILLUMINATING - GAS.

Specification forming part of Letters Patent No. 66,041, dated June 25, 1867.

To all whom it may concern:

Be it known that I, ALONZO C. RAND, of Union Mills, county of Erie and State of Pennsylvania, have invented a new and Improved Apparatus for Making Illuminating-Gas; and I do hereby declare that the following is a full and exact description of the same, together with its operation, reference being had to the accompanying drawings, making a part of this specification.

As the apparatus is simple in its parts, a perspective view only is given.

The nature of my invention consists in manufacturing an illuminating-gas permanent in its character, manufacturing benzole, and improving or increasing the value of crude petroleum for refiners' use by one and the same operation, thus enabling gas companies to make a cheap good illuminating-gas by a very simple process.

A¹ A² are tanks with closed tops and bottoms—A¹ to hold the crude petroleum, A² to hold the benzole—A¹ represented above ground on stone pier; A² below ground and surrounded by water contained in water-bath B. In the tank A¹ is a steam-coil, C, used to heat the liquid in said tank. The steam is furnished through the pipe D. E is the air-pipe, connecting with an air-pump, (not shown in the drawings,) to deliver the air into the bottom of tank A¹. The pipe F feeds the crude petroleum or other hydrocarbon into the tank A¹. G is a cock used to draw off the heavy hydrocarbon after the lighter portions have been distilled off. H is the pipe used to conduct the warm vapor and carbureted air into the tank A². This mixture of vapor and air is conducted to the bottom of the tank A², and makes its exit through the fine holes in the delivery end of pipe H. I is a pipe to deliver the non-condensable or permanent gas into the gas-holder J. K is the usual delivery-pipe leading to the mains.

Having thus described the various parts of my invention, I will now proceed to show its operation, use, and advantages.

The tank A¹ is first nearly filled with crude petroleum or any other hydrocarbon that is too heavy to be used for carbureting air by a cold process. The tank A² can then be filled half full of benzole of a specific gravity light enough to carburet the air by cold process. Now, allow the steam to pass through the coil until the crude petroleum is warm. Then set

the air-pump working, and the air passes into the tank A¹ near the bottom, and is distributed through the warm petroleum in small streams, as shown by the perforations in the air-pipe. The air in its passage upward will be partially carbureted, but will also have absorbed the warm vapors of benzine. These vapors and air then pass through the pipe H, and downward to the bottom of the tank A², through perforations same as those in A¹. As the tank A² is half filled with cold benzine and the tank itself surrounded with cold water, the vapors are condensed in their upward passage through the cold benzole, and nothing but the now thoroughly-carbureted air passes through the pipe I into the gas-holder J. It will at once be seen that, while this process is going on, gasoline or benzole of very light gravity is being made constantly, the air acting as a vehicle, conducting it into the benzine-tank A²—the proper place for its deposit and use.

To enable those not skilled in the distillation of crude petroleum to fully understand and comprehend the advantages of this method over all others, I would say that in the manufacture of gasoline or benzole by the old methods a large amount of permanent gas is made and lost, as on an application of heat the gas will pass off before any condensation takes place in the condensing-worm, and during the process of distillation permanent gas is constantly passing off through the pipes provided near the tail-pipes to the condensing-worms.

By my process all this permanent gas is saved in the gas-holder. This gas is the richest and best gas for illuminating purposes, as, having passed through the condenser, it will not condense in the pipes in the streets or those leading to the burners.

After all the lighter portions have been taken off from the crude petroleum, the remainder is then ready for the refiner to use for making illuminating-oil.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the tanks A¹ and A² with the gas-holder J, operated substantially as and for the purposes herein described.

ALONZO C. RAND.

Witnesses:

E. D. SUNDERLIN,
A. B. RAND.