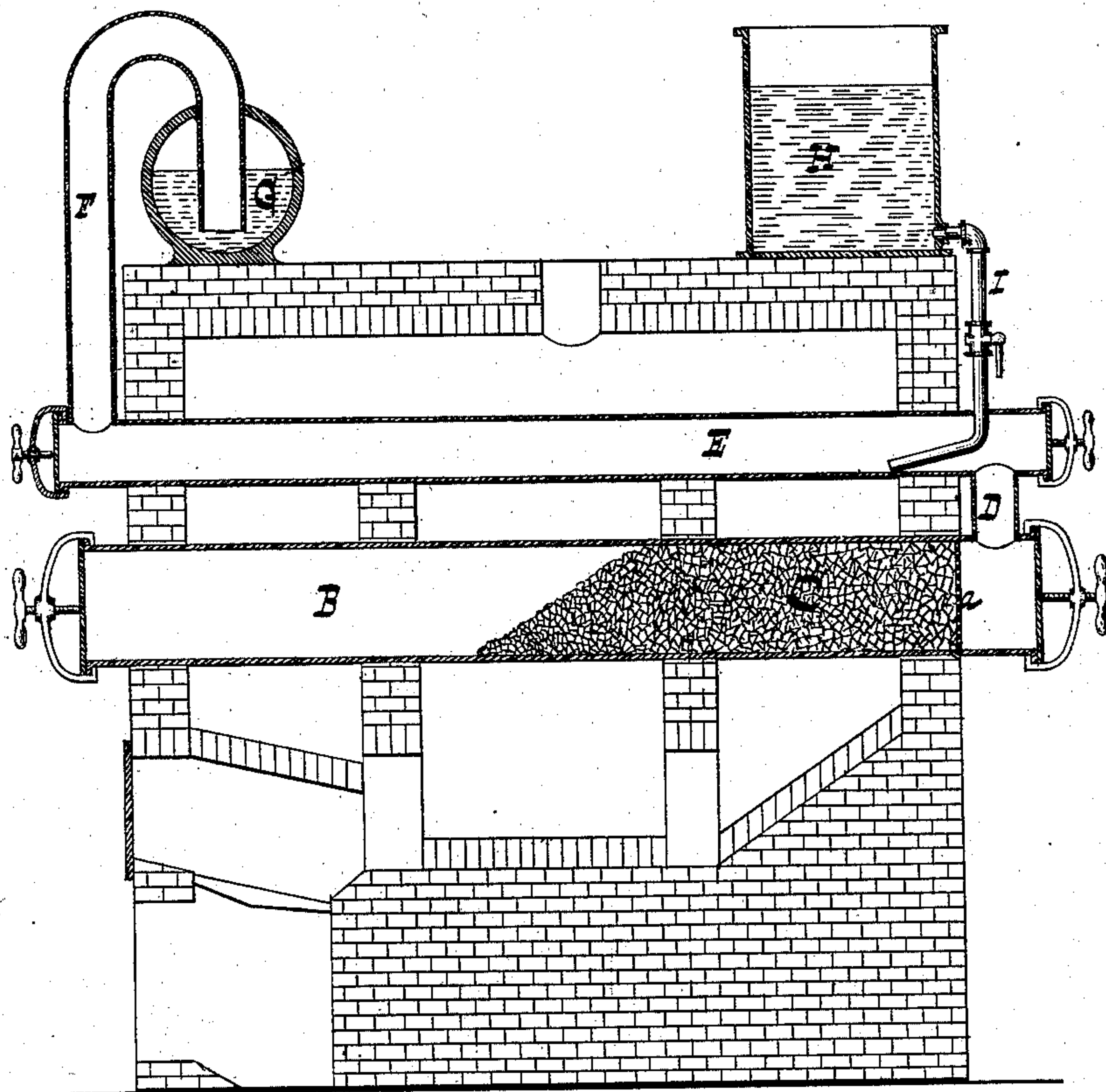


A. W. WILKINSON.
PROCESS FOR THE MANUFACTURE OF ILLUMINATING GAS.
No. 193,062. Patented July 10, 1877.



Witnesses

James L. Norris.
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UNITED STATES PATENT OFFICE.

ASA W. WILKINSON, OF NEW YORK, N. Y.

IMPROVEMENT IN PROCESS FOR THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **193,062**, dated July 10, 1877; application filed June 17, 1876.

To all whom it may concern:

Be it known that I, ASA W. WILKINSON, of the city, county, and State of New York, have invented a new and Improved Process for the Manufacture of Illuminating-Gas, which improvement is fully set forth in the following specification:

This invention consists in a new and improved process of manufacturing illuminating-gas by distilling wood, peat, or coal, passing the gases thus produced through the residual incandescent charcoal of a previous charge pushed back to the rear end of the retort, and mixing the resulting gases in a highly-heated state with liquid hydrocarbon, and afterward converting the whole into a permanent gas by redistillation, the operation being continuous and uninterrupted throughout.

In the accompanying drawing, I have shown a sectional view of an apparatus which may be used in carrying out my process.

It is a well-known fact that gases distilled from peat, coal, and particularly from wood, contain a large percentage of carbonic acid, a gas which is not combustible, and which has to be removed before the gas is in a fit condition for burning. If the carbonic acid is removed, a large percentage of the gases evolved from the peat, coal, or wood is lost.

The principal advantage of my process is that, by passing the gases evolved from peat, coal, or wood through incandescent charcoal, contained in the rear end of the same retort in which the peat, coal, or wood are distilled, and before the same are admitted to the converting-retort, the carbonic acid mixed with said gases is converted into carbonic oxide, according to the formula, $\text{CO}_2 + \text{C} = 2(\text{CO})$, and by these means the carbonic acid is converted into a combustible gas, and the volume of the gases admitted to the converting-retort, instead of being diminished, is largely increased.

In carrying out my process I make use of a retort, B, which is provided at one end with a grate, *a*, and with a stand pipe, D, which leads into the converting-retort E. That portion of the retort B next to the grate *a* is kept constantly charged with incandescent charcoal, while the remaining portion of said retort contains the peat, coal, or wood to be distilled,

the charge of incandescent charcoal being obtained from the residuum of the previous charge, which, being pushed back to the rear end of the retort, is not liable to cool off to such a degree that the desired effect is lost.

The retort E communicates, by means of a pipe, I, with a tank, H, which contains naphtha, petroleum, or other rich hydrocarbon, and a stand-pipe, F, extends up and extends into the hydraulic main G.

When the retorts are heated, the gases evolved from the charge in the front end of the retort B have to pass through the incandescent charcoal contained in the rear end of said retort before they are admitted to the converting-retort E. The carbonic acid mixed with said gases becomes converted into carbonic oxide, as above stated, and as these gases pass through the converting-retort they become mixed with hydrocarbon vapors, and the mixture is converted into a highly-illuminating gas.

If desired, the gases emanating from the retort B may be subjected to a purifying process, and then passed through a saturator containing volatile naphtha, and after such purified gases have become saturated with the vapors of naphtha they are introduced into the converting retort or retorts.

By these means all gases evolved from peat, coal, or wood are made available for illuminating-gases.

I am aware that, heretofore, in the manufacture of gas, the spent or residual carbon or charcoal has been employed to convert the carbonic-acid into carbonic-oxide gas.

I do not claim, therefore, as my invention, passing the gases evolved from wood, peat, or coal through incandescent carbon or charcoal; nor do I claim the pushing back of the residual coke or charcoal to the rear end of the retort to make room for a fresh charge of coal, as such is old.

By my process the residual carbon or charcoal remains in the same retort in which it has been formed. It retains its heat and the carbonic acid evolved from the subsequent charge is fully converted into carbonic oxide, as above stated. My process, therefore, can be carried on with comparatively little labor and without interruption.

I do not claim enriching gas evolved from wood, peat, or coal that has been passed through incandescent charcoal, by mixing it with hydrocarbon vapors, and afterward converting the whole into a permanent gas.

I claim—

The process herein described of manufacturing illuminating-gas by distilling wood, peat, or coal, passing the gases thus produced through the residual incandescent carbon of the previous charge pushed back to the rear end of the retort in which it has been formed, and mixing the gases resulting

therefrom, in a highly-heated state, with liquid hydrocarbon, and afterward converting the whole into a permanent gas by redistillation, the operation being continuous and uninterrupted, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 15th day of June, 1876.

A. W. WILKINSON. [L. S.]

Witnesses:

W. HAUFF,
ROBT. E. MILLER.