I. HERZOG.

Apparatus for the Manufacture of Illuminating Gas

No. 197,366. Patented Nov. 20, 1877.

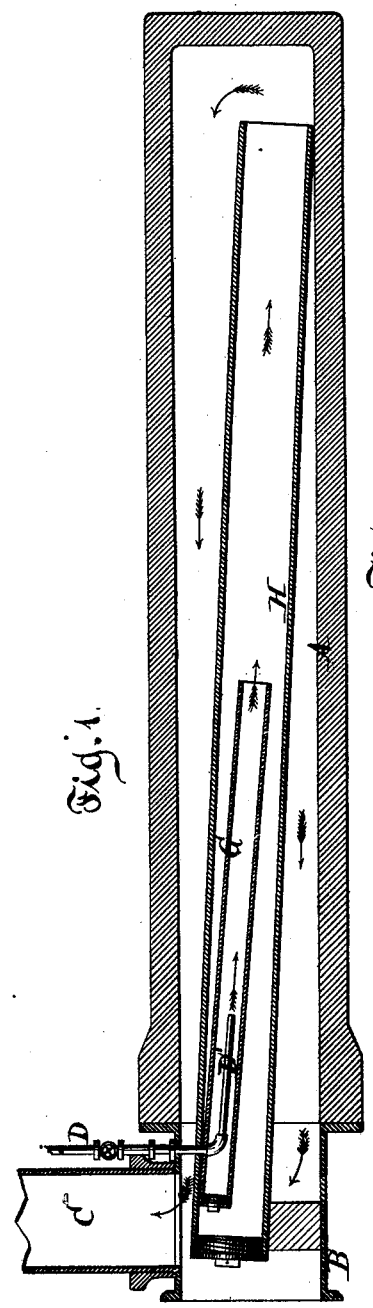

Fig. 1.

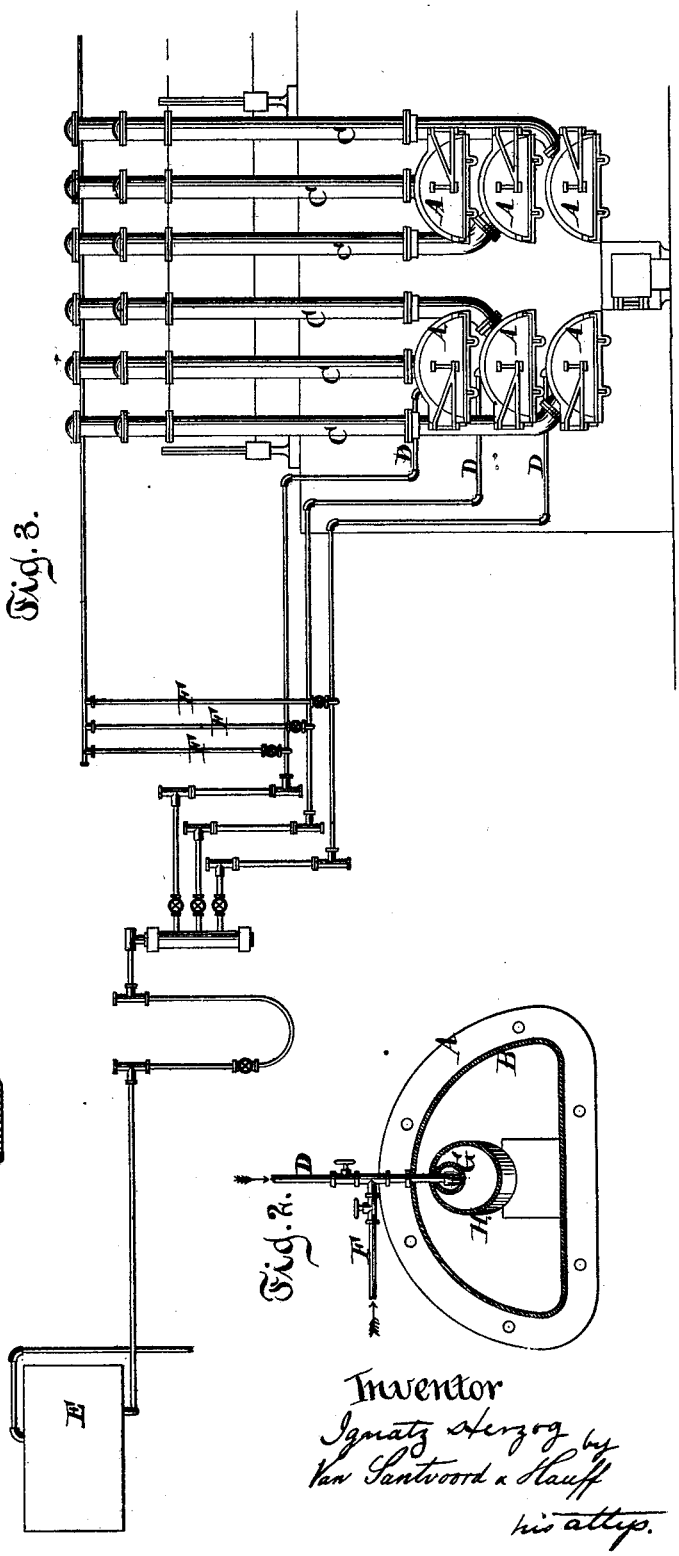

Fig. 3.

Fig. 2.

Witnesses.

~~Otto~~ Schofeland.

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UNITED STATES PATENT OFFICE.

IGNATZ HERZOG, OF RIDGEFIELD, NEW JERSEY.

IMPROVEMENT IN APPARATUS FOR THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **197,366**, dated November 20, 1877; application filed September 13, 1877.

To all whom it may concern:

Be it known that I, IGNATZ HERZOG, of Ridgefield, in the county of Bergen and State of New Jersey, have invented a new and useful Improvement in Apparatus for the Manufacture of Illuminating-Gas, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a longitudinal section of the retort which I use in carrying out my invention. Fig. 2 is a transverse section of the same. Fig. 3 is a diagram, showing a bench of retorts set for the purpose of carrying out my invention.

Similar letters indicate corresponding parts.

This invention relates to the manufacture of illuminating-gas from petroleum or other hydrocarbon liquids; and the invention consists in the combination, with a gas-retort and with the liquid-supply pipe, of one or more jackets, which surround the inclined arm of the supply-pipe, and extend in an inclined position toward the closed or rear end of the retort, said jacket or jackets being closed in front and open at the rear end, so that the horizontal arm of the supply-pipe is protected against the heat of the retort by the jacket or jackets, and the temperature of the liquid, as the same passes through the jacket or jackets, is gradually raised, and the vapors produced therefrom are converted into a permanent gas of superior illuminating power.

In the manufacture of illuminating-gas from hydrocarbon liquids, it is found that when the liquid is at once introduced into a red-hot retort a large portion of the carbon contained in the liquid becomes disengaged and deposited in the retort in the form of lamp-black. The gas thus produced, being deprived of its most powerful illuminating agent, is of inferior illuminating power, and the deposit of lamp-black formed in the retort is a source of trouble. On the other hand, if the hydrocarbon liquid is not exposed to a great heat, the vapors evolved therefrom are not converted into a permanent gas, and they are liable to condense in the service-pipes before they reach the burners.

The object of my invention is to avoid these difficulties, and to produce from hydrocarbon liquids a rich illuminating-gas, without the formation of a deposit of lamp-black in the retorts.

In the drawings, the letter A designates a gas-retort, of clay or any other suitable material, provided with a mouth-piece, B, and a stand-pipe, C, of the usual form and construction. Into this retort, near its mouth, extends a pipe, D, which is provided with a downwardly-inclined arm, D′, extending toward the closed rear end of the retort. The pipe D connects with a tank, E, Fig. 3, containing petroleum or other hydrocarbon liquid suitable for the production of illuminating-gas. With the pipe D connects a steam-pipe, F, the object of which will be hereinafter stated.

The inclined arm D′ of the supply-pipe is surrounded by a jacket, G, which extends toward the rear end of the retort, and is closed at its front end, while its rear end is open. The diameter of this jacket is considerably larger than that of the arm D′, and it extends far beyond the end of said arm, as shown in Fig. 1. The jacket G is surrounded by another jacket, H, of still larger diameter and greater length, as shown. The jacket G is slipped on the supply-pipe D, and it is supported in any suitable manner, so as to leave an air-space all round the inclined arm D′. The jacket H is also slipped on the supply-pipe, and it is supported in front by a pillow, of clay or any other suitable material, while its rear end rests upon the bottom of the retort. The front ends of the jackets are closed by means of screw-plugs, which are protected on their inner ends by layers of clay.

When the retort is heated, and the hydrocarbon liquid is admitted through the pipe D, the inclined arm D′, being of comparatively small diameter, and being protected by the jackets against the direct action of the heat, is kept comparatively cool by the liquid flowing through it; but as the liquid discharges into the jacket G it is formed into vapors, which, in their passage through this jacket, become gradually heated, and as they pass into the outer jacket H the heat is still further increased. On discharging from this jacket, the heated vapors have to pass through the entire length of the red-hot retort before they

can escape, and in passing through the retort said vapors are converted into a fixed gas.

If any obstruction takes place in the flow of the liquid through the supply-pipe, I admit steam through the pipe F.

In experimenting with my retort I have obtained good results by using only one jacket, G; but by using two jackets I have entirely obviated the deposit of lamp-black in the retort.

I am aware that it is not new to extend an oil-supply tube within the retort in this class of apparatus, nor is it new to surround such inwardly-projecting tube with another tube or pipe; and I therefore do not claim, broadly, either of these arrangements; but

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

The combination, with a gas-retort and with a pipe for introducing therein a hydrocarbon liquid, of one or more jackets, which surround the inclined arm of the supply-pipe, and extend in an inclined position toward the rear end of the retort, said jacket or jackets being closed in front and open at the rear, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 6th day of September, 1877.

IGNATZ HERZOG. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.