W. B. WEST.

Apparatus for Manufacturing Illuminating-Gas.

No. 217,308. Patented July 8, 1879.

Fig. 1.

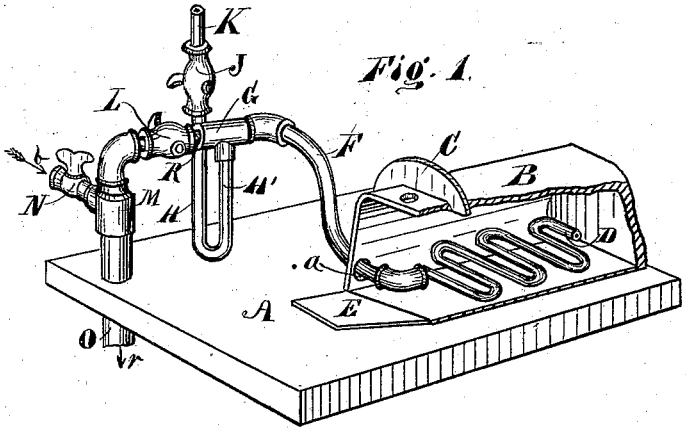
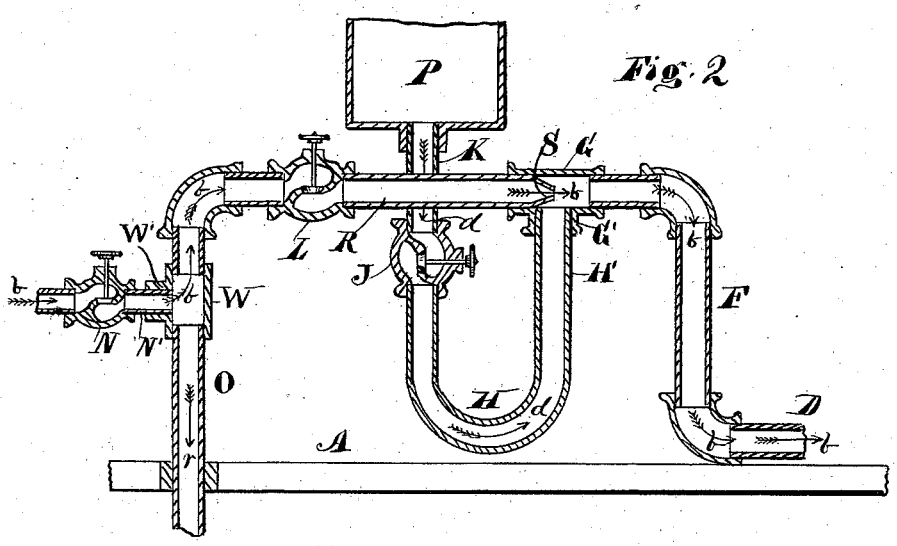


Fig. 2.



WITNESSES;

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UNITED STATES PATENT OFFICE.

WILLIAM B. WEST, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN APPARATUS FOR MANUFACTURING ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **217,308**, dated July 8, 1879; application filed March 3, 1879.

To all whom it may concern:

Be it known that I, WILLIAM B. WEST, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Apparatus for Manufacturing Illuminating-Gas from Steam and Hydrocarbon Oils, of which the following is a description, reference being had to the accompanying drawings.

My invention relates to a new apparatus for manufacturing illuminating-gas.

The object of my invention is to provide a system of newly constructed and arranged steam and oil pipes and nozzle, having new modes of operation for introducing steam and oil into a retort for the manufacture of illuminating-gas.

My invention consists in the new construction, arrangement, and combination of a nozzle having an outer case or T-coupling, with its branch opening below the contracted mouth of a steam-pipe, and also provided with a U-shaped oil-supply pipe, a steam-pipe, and a coil-pipe in a retort, whereby dry steam is employed as the injective power and the hydrocarbon oils are drawn upward from the U-shaped oil-pipe mixed with the dry steam in the form of spray, the steam becoming thoroughly saturated with the vapor of the oil at a temperature above that of boiling water, and the mixed gases thus generated and mixed in the pipes are permanently fixed in the heated coils and retort before leaving them for the washers, the purifiers, and gas-holder.

In the accompanying drawings, in which like letters of reference in the different figures indicate like parts, Figure 1 represents a perspective view of my new apparatus for manufacturing illuminating-gas. Fig. 2 is a sectional view of the steam and oil supply pipes, showing also the construction and arrangement of the nozzle.

B represents the retort, erected on the floor A, and furnished with a furnace, all in the ordinary manner. In the retort B is located one or more sets of coil or return-bend pipes, D, also of the ordinary construction. The pipe D should be as large as possible to permit the expansive gas to pass freely through the coils. One end of the coil D is left open at or near the rear end of the retort. The other end passes through the retort and connects with the pipe F, which extends upward above the top of the retort, and also connects with one end of the T-coupling or case G. The other end of the T-coupling or case G is provided with a pipe, R, having a contracted mouth, S. Said mouth S extends inside of the T-coupling G, and projects about half-way over the branch opening G′ below. The other end of the nozzle-pipe R is provided with a valve or cock, L, and then turns down, forming the drip-pipe O, said drip-pipe O being also provided with a T-coupling, W.

The steam-pipe N′ connects the branch W′ of the T-coupling W with a steam-generator, (not shown,) and is provided with a valve, N, for regulating the quantity of steam used.

The drip-pipe O leads to a tank below, and is designed to convey the condensed steam downward, while the live steam passes through the pipe R and contracted nozzle S into the pipe F and coil D.

The oil-tank P is located above the injector or nozzle S, and is connected to the branch opening G′ of the T-coupling G (which is below the mouth of the nozzle S) by the U-shaped pipe or oil-trap H H′. The pipe H is also provided with a cock or valve, J, for regulating the flow of oil.

Having thus described the construction and arrangement of pipes, valves, and retort, I will now describe the process by which the oils and steam are mixed and introduced into the heated coil and retort and converted into a permanently-fixed gas for illuminating purposes, to wit: The oil is fed by the U-shaped pipe H H′ to the T-coupling or case G, and discharged therein below the contracted inward-projecting mouth S of the steam-pipe R, the quantity of oil being regulated by the valve J. The steam as it passes through the contracted end S′ of the pipe R forms a vacuum and draws the oil up into the case G, and also in contact with the steam, the velocity of the steam carrying the oil with it in the form of spray and heating the oil beyond the temperature of boiling water, thus forming a thorough mixture of the oil-vapor and steam, which is forced into and through the pipe F and coil-pipes D, and discharged at the rear end of the retort B, thus causing the carbureted vapors

to be heated to a very high degree, and converting them into a permanent fixed gas in the coil and retort, from which the gas is conveyed to the washer or scrubber and the purifiers, and finally into the gas-holder, thus producing a very rich and highly-illuminating gas from oil and steam.

I am aware that retorts containing coils of pipes, also U-shaped pipes or traps, are old, and that variously-constructed nozzles are now in use; but I am not aware that a nozzle constructed and arranged to operate in connection with steam and oil supply pipes and a coil of pipes in a retort have been constructed and arranged to operate in the manner set forth in my application.

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

In combination with the nozzle consisting of the case or T-coupling G, having its branch opening G′ below the mouth S of the steam-pipe R, and also provided with the U-shaped oil-pipe H H′, the pipe F and coil-pipe D in the retort B, as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM B. WEST.

Witnesses:
D. F. SPEES,
G. BYRON A. TYLER.