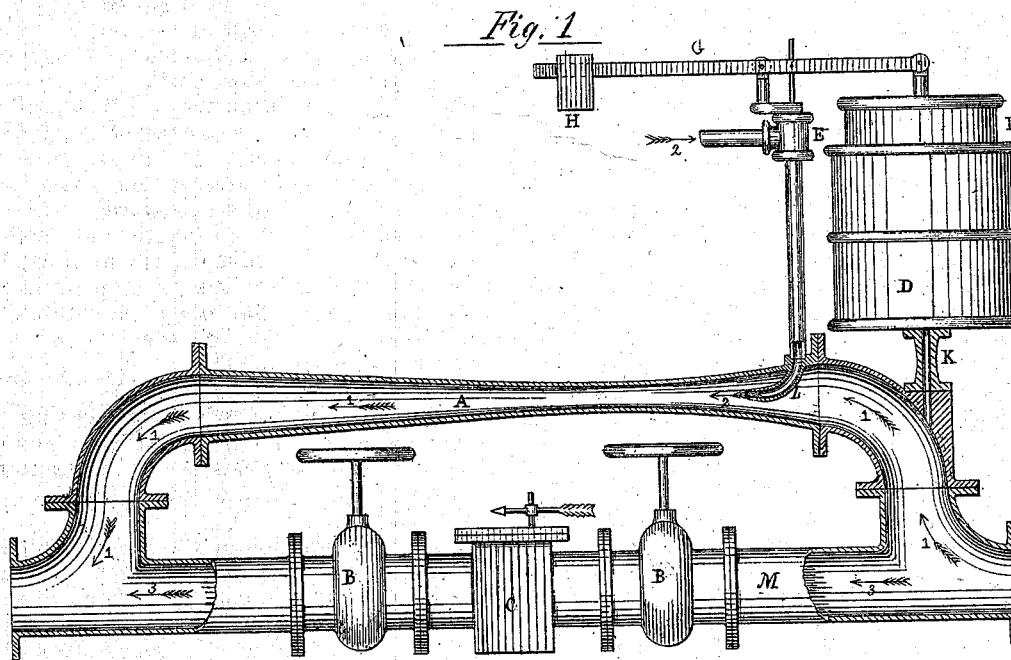


P. W. MACKENZIE.

Improvement in Exhaust Apparatus for Gas-Works.

No. 115,334.

Patented May 30, 1871.



Geo. M. Lape

Philip W. Mackenzie

Witnesses.

Chas. W. Sobell

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# UNITED STATES PATENT OFFICE.

PHILIP W. MACKENZIE, OF BLAUVELTVILLE, NEW YORK.

## IMPROVEMENT IN EXHAUST APPARATUS FOR GAS-WORKS.

Specification forming part of Letters Patent No. 115,334, dated May 30, 1871.

I, PHILIP W. MACKENZIE, of Blauveltville, Rockland county, State of New York, have invented certain Improvements in Exhausting Apparatus, of which the following is a specification:

The first part of my invention relates to the combination of the governor D and its pipe-connection K, balancing and connecting lever G, and throttle-valve E with the tube A and jet L, for the purpose of controlling the current of steam through said jet and tube by the quantity of gas generated, and also preventing a vacuum in the retorts or other generating apparatus. The second part of my invention relates to the combination of the by-pass pipe M, and automatic by-pass C, and stop-valves B B with tube A and jet L, for the purpose of passing the gas when the exhauster is not in operation, the by-pass valve opening as the pressure comes upon the retort side.

Figure 1 is an elevation embodying my invention; A and K are sections; and B B, C, M, D, E, and G, side elevation.

### *General Description.*

A is the trumpet-shaped tube, through which the gas and steam combined pass on to the condenser, purifier, and washers or scrubbers, as indicated by the arrows 1 1 1. L is a jet of steam, passing, as shown by the arrow 2, centrally through the tube A, for the purpose of exhausting or sucking the gas from the retorts or other generators, as indicated by the arrows 1 1, and forcing it through tube A. D is the or-

dinary gas-governor, communicating through the pipe K with the main pipe below, and, with its inverted cup I, balancing and connecting lever G; and counter-weight H operates the throttle-valve E, thereby controlling the quantity of steam passing through the jet L by the make of gas or by the varying pressure on the inverted cup, thus preventing a partial vacuum in the retorts, which may be dangerous. B B are ordinary stop-valves, and are always open when the exhauster is running, and only closed when the by-pass valve is foul or out of repair, as by closing them the by-pass valve can be removed and repaired. C is the by-pass valve. It is automatic and remains closed when the exhauster is running; but when the exhauster fails or stops from any cause the by-pass flies open and allows the gas to pass freely through the pipe M, as indicated by the arrows 3 3.

I claim as my invention—

1. The combination of the governing arrangement D, G, and H, constructed and operating substantially as shown and described, with the jet-pipe L and tube A, for the purposes specified.

2. The combination of the by-pass pipe M and by-pass valve C with the steam-jet L and tube A, as arranged, and for the purpose described.

PHILIP W. MACKENZIE.

Witnesses:

CHAS. W. IBELL,

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