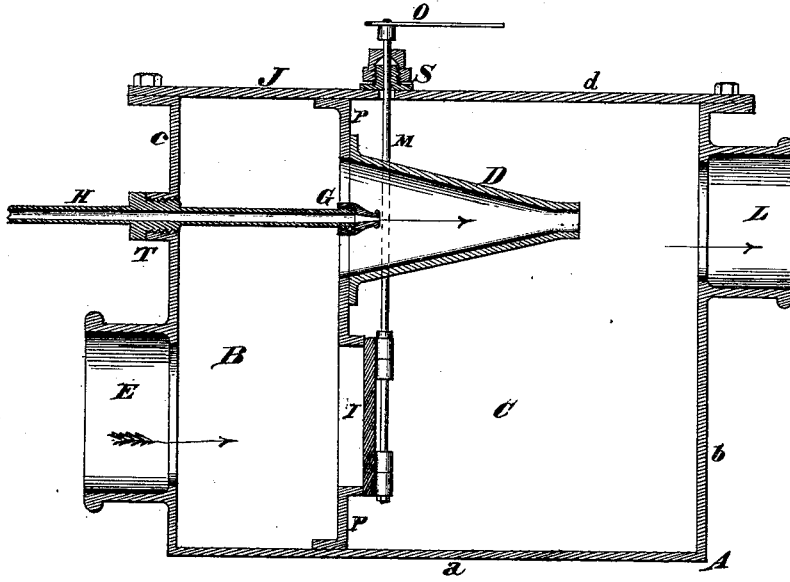


R. & W. J. SALTER.  
GAS-EXHAUSTERS.

No. 195,404.

Patented Sept. 18, 1877.



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# UNITED STATES PATENT OFFICE.

RICHARD SALTER AND W. JAMES SALTER, OF COVINGTON, KENTUCKY.

## IMPROVEMENT IN GAS-EXHAUSTERS.

Specification forming part of Letters Patent No. 195,404, dated September 18, 1877; application filed June 13, 1877.

### *To all whom it may concern:*

Be it known that we, RICHARD SALTER and W. JAMES SALTER, both of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Gas-Exhausters, of which the following is a specification:

This invention relates to gas-exhausts, and has for its object to simplify and cheapen the construction of such apparatus.

The improvements will be fully hereinafter described, and a preliminary explanation is therefore deemed unnecessary.

The figure shown represents a central vertical section of our improvement.

A represents a rectangular box, with sides *a*, *b*, *c*, and *d*, which are preferably made of cast-iron. These several sides may be made of pieces of cast metal, with flanges and bolts for uniting the several sides in the same manner as parts *b*, *c*, and *d* are connected, or the box may be cast as shown in the drawings. Wrought-iron can be used, but it will not withstand the deleterious action of the gases as well as cast-iron.

*d* represents the top of the exhaust, *a* the bottom, and *b c* the ends.

The width of the machine should be about three-fourths of the height.

P represents a partition, dividing the exhauster into two compartments or chambers.

B represents a vacuum-chamber, and H a steam-pipe with a contracted nozzle, as shown, for admitting a jet of steam, through cone D, into pressure-chamber C.

I represents a by-pass valve, hinging on rod M. This rod turns in bearings, as shown. The top of rod M projects up through the exhauster; and S represents a stuffing-box for preventing the escape of gas, and, at the same time, allowing rod M to move freely in its bearings.

O is a vane or indicator to denote the position of valve I. This valve is of sufficient size to permit all of the gas to pass through same when opened, and it should be ground or fitted to shut off the escape of gas when there is any pressure on chamber C.

H represents a steam-pipe, on the end of which is nozzle G.

The mode of operation is as follows: The

gas enters the vacuum-chamber through pipe E, and a jet of steam is admitted through pipe H. The force of the steam tends to create a vacuum in chamber B, which forces the gas with the steam into chamber C. The pressure of the steam in chamber C closes by-pass valve I, and forces the gas to pass through the outlet L into the gas-pipes connected thereto. When the steam is shut off the pressure becomes greater in chamber B, and thus opens by-pass valve I and allows the gas to pass off through outlet L.

The admission of steam can be regulated by a cock, or a governor may be employed to regulate the pressure and amount.

The arrangement of my device is such as to avoid the necessity of a governor, as the steam can be regulated by hand.

We do not confine ourselves to the use of a square exhauster, as it may be either cylindrical or conical in form, and can be made of wrought instead of cast metal. The form here shown we deem the best.

The contracted nozzle G on steam-pipe H is not indispensable, as a small pipe may be advantageously employed in lieu thereof. The by-pass valve may also be removed and a hand-valve substituted therefor. Such changes are included in the terms of our first claim.

Having described our improvement, what we claim as our invention is—

1. The box A, divided into two chambers, B and C, by a vertical partition, from which projects a cone, D, in combination with the steam-pipe H and nozzle G, substantially as and for the purpose herein set forth.

2. The box A, having inlet E and outlet L, and divided into chambers B and C by a partition, P, having an opening controlled by a valve, I, and provided with a cone, D, projecting into the chamber C, in combination with the steam-pipe H and nozzle G, all substantially as and for the purpose described.

In testimony whereof we have hereunto set our hands this 6th day of June, 1877.

RICHARD SALTER.  
W. JAMES SALTER.

Witnesses:

JAMES M. WRIGHT, Jr.,  
J. A. RUTHERFORD.