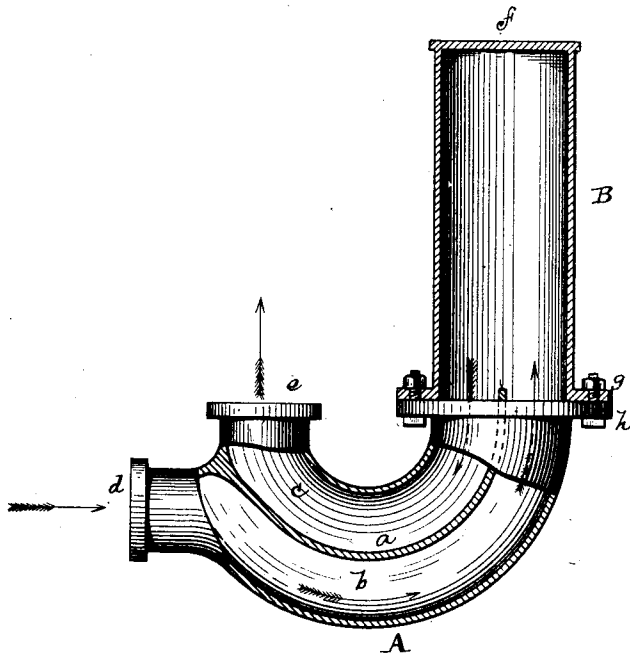


(No Model.)

C. L. KIDDER.  
EXHAUST MUFFLE.

No. 330,242.

Patented Nov. 10, 1885.



ATTEST:  
*E. Rowland*  
*C. L. Kidder*

INVENTOR:  
*Charles L. Kidder*  
*C. J. Sweeney*  
Atty

# UNITED STATES PATENT OFFICE.

CHARLES L. KIDDER, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR TO  
BERGMANN & CO., OF NEW YORK, N. Y.

## EXHAUST-MUFFLE.

SPECIFICATION forming part of Letters Patent No. 330,242, dated November 10, 1885.

Application filed May 8, 1885. Serial No. 164,778. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES L. KIDDER, of New Brunswick, in the county of Middlesex and State of New Jersey, have invented a certain new and useful Improvement in Exhaust-Muffles for Steam-Engines, of which the following is a specification.

The object of my invention is to muffle the exhaust of a steam-engine—that is to say, to do away with the noise and the vibration of the exhaust-pipe due to the emission of the exhaust-steam in short and violent jets as the valve opens and closes the exhaust-port. The principle of operation of the devices heretofore employed for this purpose has been to break up the jets of steam into small quantities, which pass through the pipe with less violence than the powerful jets which issue from the engine. The apparatus necessary for this is complicated and expensive.

I make use of a different method, which is carried into effect by means of very simple and inexpensive devices.

This method consists in transforming the separate jets after they leave the engine into a continuous flow of steam, which passes gradually through the exhaust-pipe without causing it to vibrate and without making any noise. I accomplish this by the use of a compression-chamber into which the steam passes from the exhaust-port, and is compressed by its own force into an elastic cushion of vapor, while from such chamber there is a communication with the exhaust pipe or stack, through which such accumulated vapor passes in a steady flow, not affected by the intermittent passage of the steam into the chamber.

The accompanying drawing is a view, principally in section, of an apparatus embodying my invention.

A is a suitable chamber, which is divided

longitudinally by a partition, *a*, into two passages, *b c*. Passage *b* is connected at *d* with the exhaust-port of the engine, and passage *c* at *e* with the exhaust-pipe, which extends to the stack or out into the air. The chamber A with its partition is preferably cast in one piece of iron.

B is the compression-chamber, which may be a piece of wrought-iron pipe closed at its upper end, *f*, and having a flange, *g*, at its lower end, by which it is secured to flange *b* on the open end of chamber A.

The operation of this apparatus is as follows, the arrows indicating the direction of the exhaust-steam: As the exhaust-port is opened, jets of steam pass through the passage *c* into the compression-chamber B and rise to the top thereof until the upper part of such chamber becomes filled with compressed steam. Such steam is then by its own tension gradually and continuously forced out in a steady and continuous flow through the passage *c* and into the exhaust-pipe. Thus there is a constant, easy, noiseless passage of the steam, instead of an intermittent succession of violent puffs.

What I claim is—

In an exhaust-muffle for steam-engines, the combination of the chamber divided by a partition into two passages, one of said passages being connected with the exhaust-port of the engine and the other with the exhaust pipe or stack, and the compression-chamber connected with both said passages, substantially as set forth.

This specification signed and witnessed this 6th day of May, 1885.

CHARLES L. KIDDER.

Witnesses:

A. W. KIDDER,  
E. C. ROWLAND.

Correction in Letters Patent No. 330,242.

It is hereby certified that Letters Patent No. 330,242, granted November 10, 1885, upon the application of Charles L. Kidder, of New Brunswick, New Jersey, for an improvement in "Exhaust Muffles," was erroneously issued to "Bergmann & Co., their heirs or assigns;" that said Letters Patent should have been issued to *Bergmann & Company, its successors or assigns*; and that the grant of said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 17th day of November, A. D. 1885.

[SEAL.]

H. L. MULDROW,  
*Acting Secretary of the Interior.*

Countersigned:

M. V. MONTGOMERY,  
*Commissioner of Patents.*