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A. BUCHNER & E. P. McCLURE.

EXHAUST MUFFLER.

APPLICATION FILED MAR. 9, 1904.

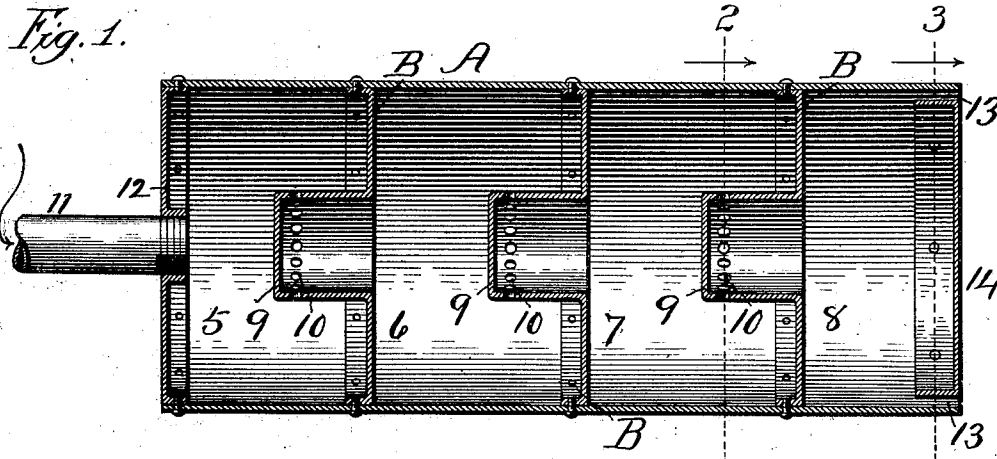


Fig. 2.

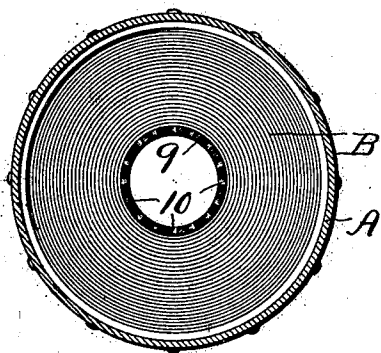


Fig. 3.

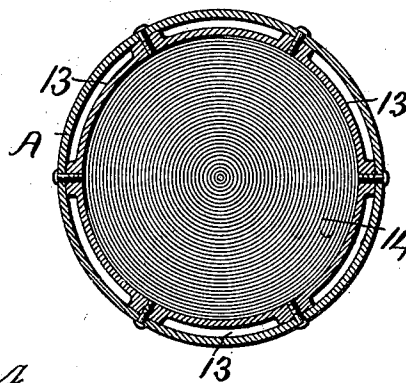
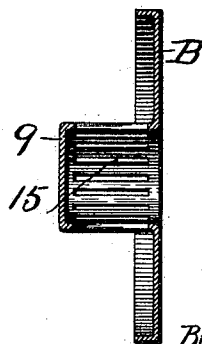


Fig. 4.



Witnesses

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Att'y in law

UNITED STATES PATENT OFFICE.

ALBERT BUCHNER AND ELMER P. McCURE, OF CHICAGO, ILLINOIS.

EXHAUST-MUFFLER.

SPECIFICATION forming part of Letters Patent No. 779,024, dated January 3, 1905.

Application filed March 9, 1904. Serial No. 197,262.

To all whom it may concern:

Be it known that we, ALBERT BUCHNER and ELMER P. McCURE, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Exhaust-Mufflers, of which the following is a specification.

This invention relates to improvements in exhaust-mufflers used for the purpose of obtaining a noiseless exhaust, and is more especially intended for vapor-engines and small motors used in automobiles, and has for its object to provide a device of this character that will effectually deaden the sound of the escaping exhaust and at the same time avoid compression or back pressure on the motor.

In the drawings, Figure 1 is a longitudinal section of a device embodying the improved features. Fig. 2 is a transverse section on line 2, Fig. 1, looking in the direction indicated by the arrow. Fig. 3 is a transverse section on line 3, Fig. 1; and Fig. 4 is a modification.

A represents an exhaust head or receptacle which will usually be of the cylindrical form shown. It is obvious, however, that any form of receptacle may be used that is best adapted for the purpose. The receptacle is provided with a number of partitions or diaphragms B, disposed at intervals and dividing the interior space into compartments 5, 6, 7, and 8. Each of the partitions are provided with a hollow contracting-dome 9, having a number of perforations 10 for the escape therethrough of the exhaust into the next compartment on its way to the discharge end of the receptacle. The exhaust-pipe 11 from the motor is inserted in the closed receiving end 12 of the receptacle and exhausts into the compartment 5, which presents a much greater area in proportion to the diameter of the exhaust-pipe, so that the exhaust product will be greatly expanded and gradually escapes into the next compartment 6 through the perforations 10 in the dome, where it is still further expanded. This operation continues through each dome and expansion-compartment until the last compartment is reached and from which the exhaust is finally discharged into the atmosphere through a number of slot-openings 13, formed in the closed circumfer-

ential discharge end 14 of the receptacle, as best shown in Fig. 3. The combined area of the perforations in the domes is much less than that of the area of the compartments in which the domes are located, thus contracting the passage from one compartment to the next in the order of succession and prevent the flow from becoming too rapid. By this arrangement the exhaust-gases are so gradually and continuously expanded that when the exhaust is finally discharged into the atmosphere no further expansion is possible and the result is a noiseless exhaust. The combined slot-openings give so great a discharge area as to spread the exhaust out into a thin sheet. The expansion and escape of the exhaust from the receptacle will be rapid enough to always insure a free exhaust and prevent the liability of back pressure checking the working capacity of the motor. The diameter of the partition-domes is less than that of the inclosing receptacle and greater than that of the exhaust-pipe connecting with the motor, so that it is a very simple matter to properly proportion these parts in accordance with the capacity of the motor in securing a noiseless exhaust. The number and area of the perforations in the different domes must also be taken into consideration in bringing about the desired result. The number of partitions and exhaust-chambers may also be varied without departing from the spirit of the invention.

Fig. 4 is a modification in that the partition-dome therein shown is provided with longitudinal openings 15 instead of the round holes in the domes inclosed in the exhaust-receptacle.

Having thus described our invention, what we claim is—

1. An exhaust-muffler, comprising a cylindrical casing, a number of imperforate partitions located therein at intervals and provided with perforated domes extending into the compartments between said partitions, and the elongated exhaust-openings.

2. An exhaust-muffler, comprising a cylindrical receptacle, a number of imperforate partitions inserted in and dividing said receptacle into a number of compartments, each of said partitions being provided with a perforated dome of a uniform diameter and opening in

said compartments, the exhaust-inlet connection, and the elongated exhaust-aperture opening outward from the last compartment.

3. An exhaust-muffler, comprising a receptacle having partitions located therein transversely and dividing the same into a number of compartments, each of said partitions being provided with a perforated dome an exhaust-pipe inserted in one end of said receptacle and the elongated openings in the discharge end opening outward from the last compartment, each of said domes being of a greater diameter than the exhaust-pipe but less than that of the inclosing receptacle.

4. In an exhaust-muffler, the combination

with a cylindrical receptacle, of a number of partitions located therein and disposed at intervals in dividing the cylinder into compartments, each partition being provided centrally with a perforated dome opening into the compartments, the inlet connection and the exhaust end provided with elongated openings.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ALBERT BUCHNER.
ELMER P. McCLURE.

Witnesses:

L. B. COUPLAND,
J. P. DONALSON.