

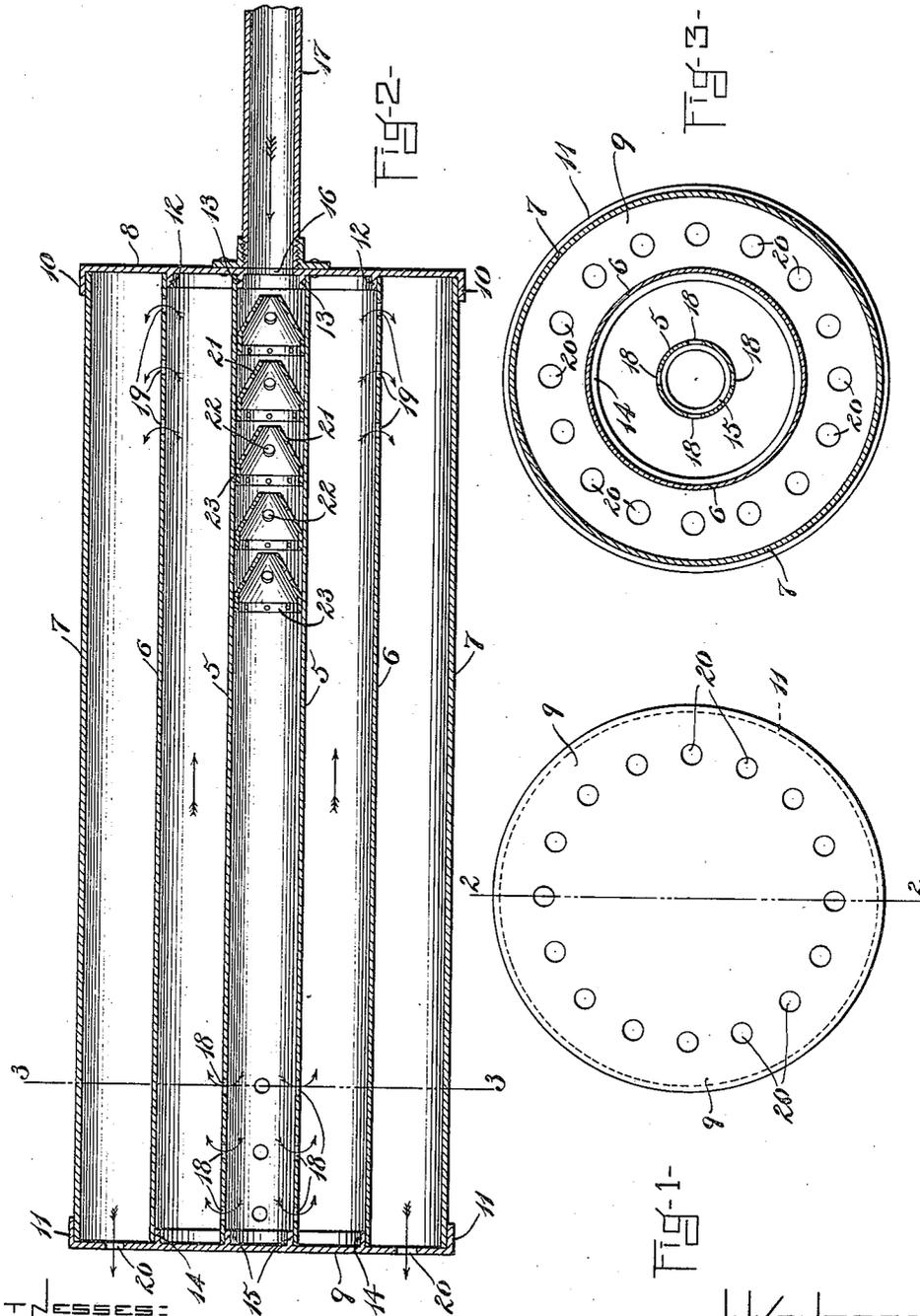
No. 748,157.

PATENTED DEC. 29, 1903.

S. BOUTON.  
NOISE MUFFLER.

APPLICATION FILED APR. 3, 1903.

NO MODEL.



WITNESSES:  
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*Louis A. Jones.*

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# UNITED STATES PATENT OFFICE,

SAMUEL BOUTON, OF SALEM, MASSACHUSETTS.

## NOISE-MUFFLER.

SPECIFICATION forming part of Letters Patent No. 748,157, dated December 29, 1903.

Application filed April 3, 1903. Serial No. 150,961. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL BOUTON, a citizen of the Republic of France, residing at Salem, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Noise-Mufflers, of which the following is a specification.

This invention relates to devices for muffling or deadening the sound of escaping vapors, such as exhaust-steam, gasolene vapors, and the like.

The invention consists in a tube provided with an inlet-orifice at one end and an outlet-orifice at the other end thereof, the interior of said tube being provided with a series of truncated cones located between said orifices, with the apexes of said cones pointing toward said inlet-orifice.

The invention again consists in a series of concentric tubes of different diameters held together by two heads to which said tubes are fastened, one of said heads provided with an inlet-orifice opening into one end of the innermost tube of said series of tubes, the other of said heads provided with outlet-orifices opening out of the annular space adjacent to the outermost tube of said series, the inner tubes of said series being provided with orifices opening alternately from one into the other at opposite ends thereof.

The invention finally consists in the combination and arrangement of parts set forth in the following specification, and particularly pointed out in the claims thereof, and a series of truncated cones located within said innermost tube, the apexes of said truncated cones pointing toward said inlet-orifice.

Referring to the drawings, Figure 1 is an end elevation of my improved muffler. Fig. 2 is a longitudinal section taken on line 2 2 of Fig. 1, looking toward the left in said figure. Fig. 3 is a transverse section taken on line 3 3 of Fig. 2, looking toward the left in said figure.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5, 6, and 7 are cylindrical tubes of different diameters, the outermost tube 7 being screw-threaded at each end thereof to receive the heads 8 9, each of said heads being provided with a flange 10 11, respectively screw-threaded interiorly to re-

ceive said tube 7. Each of the heads 8 and 9 are respectively provided with annular flanges 12 13 and 14 15. The flanges 12 and 14 project into the opposite ends of the tube 6, and the flanges 13 and 15 project into the opposite ends of the tube 5, said flanges holding the tubes 5 and 6 concentric with each other and with the outermost tube 7.

The head 8 is provided with an inlet-orifice 16 and has fastened thereto the exhaust-pipe 17, said pipe 17 connecting with the exhaust-pipe of an engine. At the end of the innermost tube 5 opposite to the inlet-orifice 16 are provided outlet-orifices 18 18, extending through the periphery thereof, and at the right-hand end of the tube 6 are provided orifices 19 19, extending through the periphery thereof. In the head 9 are provided outlet-orifices 20 20, said outlet-orifices opening out of the annular space adjacent to the outermost tube 7.

In the interior of the innermost tube 5 are provided truncated cones 21, the apexes of said truncated cones pointing toward the inlet-orifice 16, and said truncated cones 21 are preferably provided with orifices 22, extending through the peripheries thereof, said cones being riveted to the innermost tube 5 by means of a flange 23, provided thereon.

The operation of the device is as follows: The exhaust gasolene vapor or steam, as the case may be, enters the innermost tube 5 through the pipe 17 and inlet-orifice 16 and first encounters the truncated cones 21. These decrease the velocity of the exhaust-vapor, and after said vapor has passed said cones it has to travel the entire length of the innermost tube 5, thence passing outwardly therefrom through the orifices 18 into the tube 6, thence passing toward the right, Fig. 2, to the opposite end of said tube 6 from that at which it entered, passing outwardly therefrom through the orifices 19 into the tube 7, thence passing toward the left, Fig. 2, into the annular space between the tube 6 and the tube 7 and outwardly through the orifices 20 20, provided in the heads 9. It will be seen that during the passage of the exhaust-vapor the velocity is constantly reduced, both by the distance which it has to travel, by the different obstacles in its path or the changing of the direction in which the vapor is traveling,

and the increased area of the tubes to which it is alternately admitted, so that when the vapor finally passes out of the muffler through the orifices 20 in the head 9 there is no perceptible sound caused thereby.

It is evident that the number of tubes may be increased according to the necessities of the case.

My improved muffler is especially adapted to be used in connection with gasoline-engines and motor-vehicles on account of its extreme simplicity, practicability, and the small amount of space which it takes up.

Having thus described my invention, what I claim, and desire by Letters Patent to secure, is—

1. In a noise-muffler, a tube provided with an inlet-orifice at one end and an outlet-orifice at the other end thereof, and a series of truncated cones located within said tube, between said orifices, the apexes of said truncated cones pointing toward said inlet-orifice.

2. In a noise-muffler, a tube provided with an inlet-orifice at one end and an outlet-orifice at the other end, and a series of truncated cones located within said tube, between said orifices, the apexes of said truncated cones pointing toward said inlet-orifice, said truncated cones provided with orifices in the periphery thereof.

3. In a noise-muffler, a tube, a head at each

end thereof, one of said heads provided with an inlet-orifice opening into one end of said tube, the other end of said tube provided with an outlet-orifice in the periphery thereof; and a series of truncated cones located within said tube, between said orifices, the apexes of said truncated cones pointing toward said inlet-orifice.

4. In a noise-muffler, a series of concentric tubes of different diameters, two heads to which the opposite ends of said tubes are respectively fastened, one of said heads provided with an inlet-orifice opening into one end of the innermost tube of said series of tubes, the other of said heads provided with outlet-orifices opening out of the annular space adjacent to the outermost tube of said series of tubes, the inner tubes of said series provided with orifices opening alternately from one into the other at opposite ends thereof, and a series of truncated cones located within said innermost tube, the apexes of said truncated cones pointing toward said inlet-orifice.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL BOUTON.

Witnesses:

CHARLES S. GOODING,  
ANNIE J. DAILEY.