J. M. PORTER, J. F. LAIRD & A. H. GEILFUSS.

EXHAUST MUFFLER.

APPLICATION FILED NOV. 4, 1907.

901,371. Patented Oct. 20, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

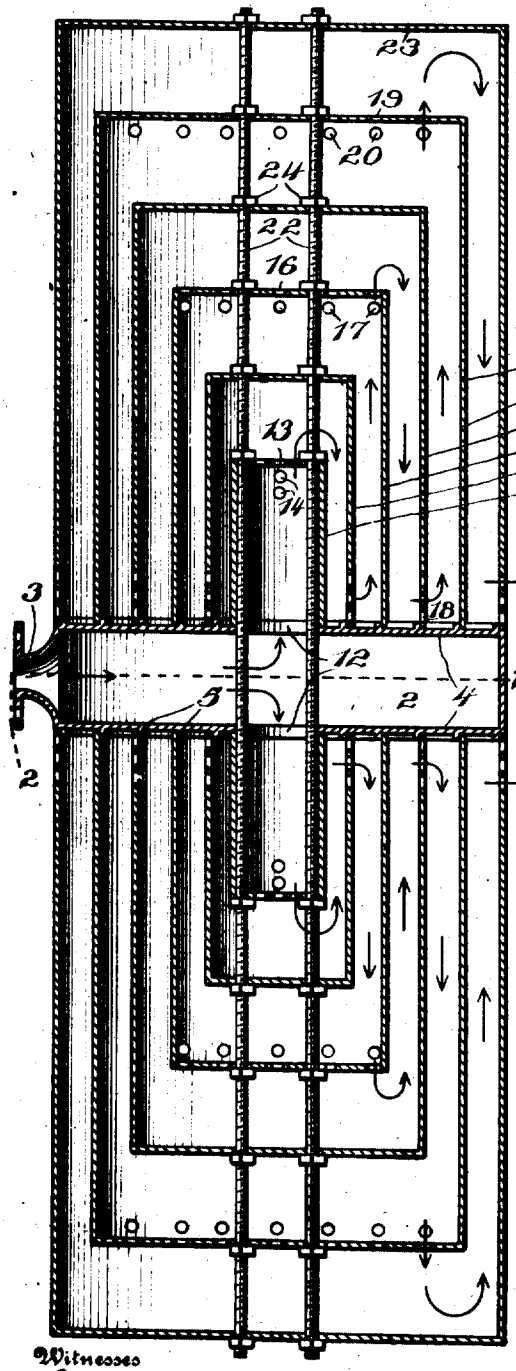
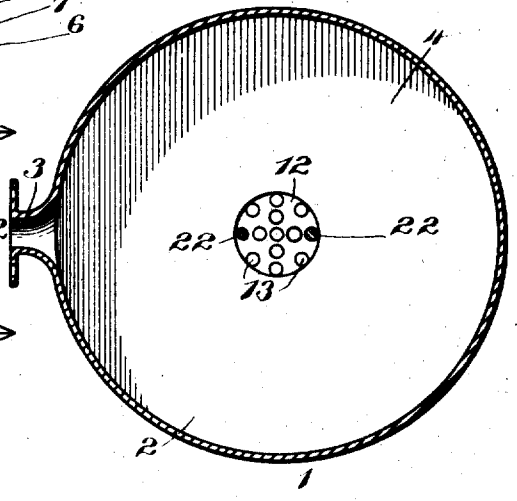


Fig. 2.



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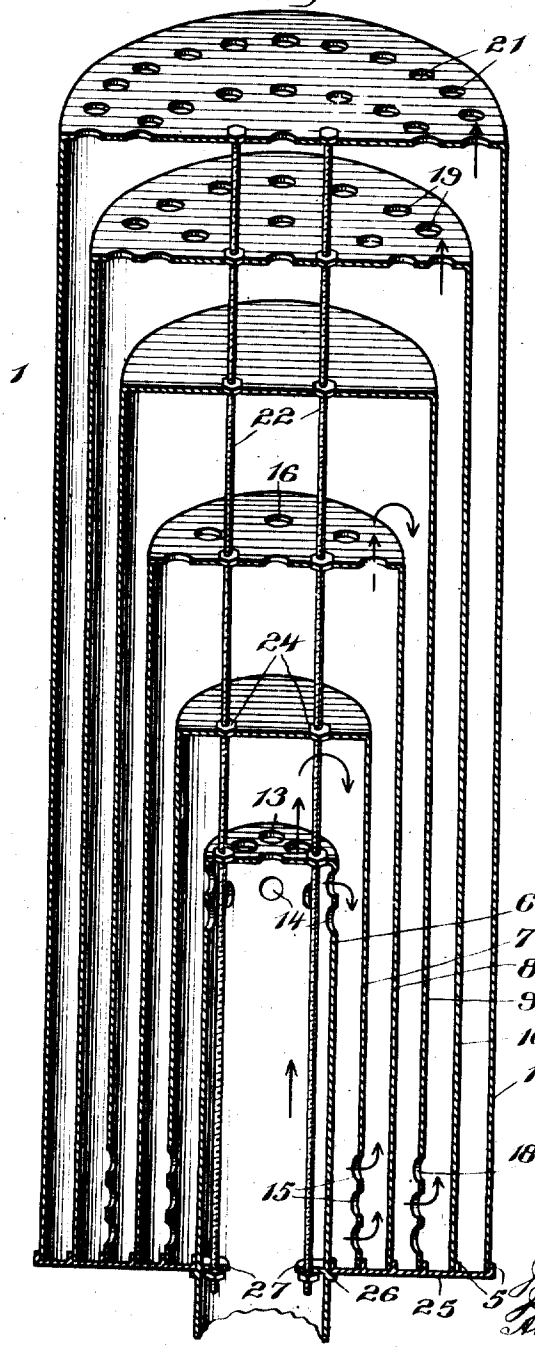
2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN M. PORTER, JOHN F. LAIRD, AND ALBERT H. GEILFUSS, OF PARKERSBURG, WEST VIRGINIA.

EXHAUST-MUFFLER.

No. 901,371. Specification of Letters Patent. Patented Oct. 20, 1908.

Application filed November 4, 1907. Serial No. 400,694.

To all whom it may concern:

Be it known that we, JOHN M. PORTER, JOHN F. LAIRD, and ALBERT H. GEILFUSS, citizens of the United States, residing at Parkersburg, in the county of Wood and State of West Virginia, have invented certain new and useful Improvements in Exhaust-Mufflers; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to exhaust mufflers for internal combustion engines and has for its object to provide certain new and useful improvements over the patent to J. M. Porter, exhaust muffler, No. 806,714, patented Dec. 5, 1905, as will be hereinafter more fully described and specifically pointed out in the appended claims.

Our invention consists in the novel arrangement of the cells of the muffler and in the novel means for rigidly holding the same in position against the pressure from within.

Our invention also consists in the construction of the muffler which provides for a double or compound muffler.

Referring to the accompanying drawings: Figure 1 is a vertical sectional view taken through a double or compound muffler constructed in accordance with our invention. Fig. 2 is a transverse sectional view taken on line 2—2 of Fig. 1, and Fig. 3 is a vertical sectional view of a single muffler constructed in accordance with our invention.

Like numerals of reference indicate the same parts throughout the several figures in which;

1 indicates the muffler, which as shown in the drawings may be either double or compound as shown in Fig. 1, or a single muffler as shown in Fig. 3. In the construction shown in Fig. 1 a central receiving chamber is employed to which the exhaust pipe from the engine is connected in any suitable manner at 3. The exhaust pot or chamber 2 is provided with two flat sides or plates 4 which, as shown in Fig. 1, are provided with a series of annular flanges 5 of different circumferences. On the outer side of each of said flanges 5 is arranged a cell, the cells being designated by numerals 6, 7, 8, 9, 10 and 11; the cell 6 being the inner one and the cell 11 being the outer one; the intermediate cells 7, 8, 9 and 10 being arranged and disposed on the plate 4 in a manner shown in Fig. 1; this construction and arrangement of cells being duplicated on each of the plates 4 of the central receiving chamber 2. Each of the said plates 4 is provided with a central opening 12 through which the exhaust passes from the receiving chamber into the innermost cell 6 as indicated by arrows in Fig. 1, said cell 6 being provided with a perforated top 13 and also perforations 14 in the sides thereof near the said top 13. The exhaust passing into said cell 6 passes out in the direction of the arrows and enters the cell 7 which is provided with a series of perforations 15 near the bottom thereof allowing the exhaust to pass into the next inclosing cell 8. Said cell 8 is provided with a perforated top 16 and a series of perforations 17 through which the exhaust passes into the next inclosing cell 9; said cell 9 being perforated at 18 allows the exhaust to pass into the next inclosing cell 10 which has a perforated top 19 and perforations 20 near the top thereof through which the exhaust passes into the outer cell 11, which cell is provided with suitable perforations as indicated at 21 through which the exhaust passes into the atmosphere.

As clearly shown each of the inclosed cells is shorter in length and of a smaller diameter than the next inclosing cell, and it will clearly appear from Fig. 1 that the tops of the cells are perforated to receive two or more threaded rods 22, said rods passing through the receiving chamber 2 and through the tops 23 of the outer inclosing cells 11, said rods 22 being threaded their entire length to accommodate a series of nuts or taps 24 which are run down on the threaded rods 22 engaging the tops of the cells, thereby securely holding the same rigidly in position upon the plates or sides 4 of the exhaust pot or chamber 2, thus adequately holding the muffler against any pressure or internal explosion which might occur therein and preventing any relatively lateral movement of the cells.

Referring to Fig. 3 it will be seen that the same principle is embodied as that just described except the muffler is not provided with a receiving chamber 2, but the exhaust from the engine passes directly into the innermost cell 6 from whence it enters the inclosing cells 7, 8, 9, 10 and 11 in the manner be-

fore described. In the construction shown in Fig. 3, however, a circular plate 25 is employed having annular flanges 5 supporting the cells 6, 7, 8, 9, 10 and 11; while the inner cell 6 is provided with an annular flange 26 near the lower end thereof to act as a bearing for said cell against the bottom plate 25. Two lugs 27 are provided within the bore of the cell 6 through which the fastening rods 22 pass as clearly shown.

Having thus fully described our invention what we claim as new and desire to secure by Letters Patent of the United States, is;

1. A muffler of the character described comprising two plates or sides, a series of cells arranged on each of said plates, each inclosing cell being of a greater height and of a larger diameter than the cell inclosed thereby, means for allowing the exhaust to pass from each inclosed cell to each inclosing cell, and a rod passing through the muffler in engagement with each of said cells for securely tying the same in position upon the said plates, substantially as described.

2. A muffler of the character described comprising a central receiving chamber, a series of cells arranged on two sides of said receiving chamber, each inclosed cell being shorter in length and smaller in diameter than its inclosing cell, means for allowing the exhaust to pass from each inclosed cell to its inclosing cell, substantially as described.

3. A muffler of the character described, comprising a series of cells one arranged within the other, each inclosed cell being shorter in length and smaller in diameter than its inclosing cell, a base for said cells, a rod passing through the interior of each of said cells, passing through each inclosed cell into its inclosing cell, and means on said rod in engagement with each of said cells for securely tying the same in position on the said base and for preventing any relatively lateral movement of the cells.

In testimony whereof, we affix our signatures, in presence of two witnesses.

JOHN M. PORTER.
JOHN F. LAIRD.
ALBERT H. GEILFUSS.

Witnesses:
T. P. BRITT,
C. HUGH DUFFY.