No. 877,860.

PATENTED JAN. 28, 1908.

H. S. POWELL.

MUFFLER FOR EXPLOSIVE ENGINES.

APPLICATION FILED APR. 29, 1907.

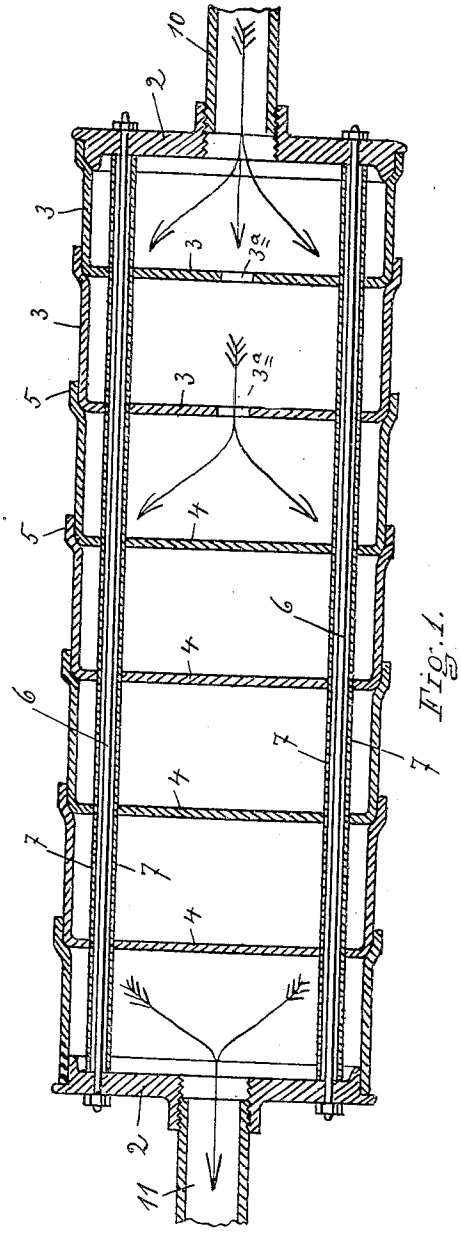



Fig. 1.

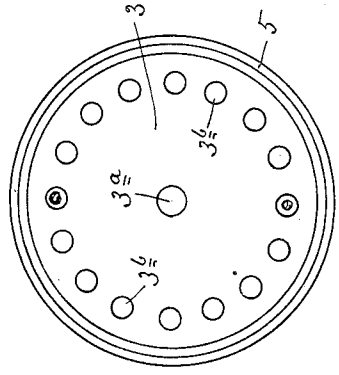



Fig. 3.

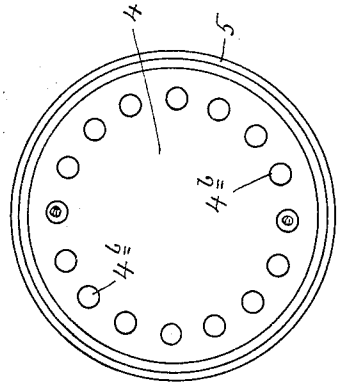



Fig. 2.

Witnesses
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# UNITED STATES PATENT OFFICE.

HERBERT SPENCER POWELL, OF CLINTON, NEW YORK, ASSIGNOR TO POWELL MUFFLER & TIMER COMPANY, OF UTICA, NEW YORK, A CORPORATION.

## MUFFLER FOR EXPLOSIVE-ENGINES.

No. 877,860. Specification of Letters Patent. Patented Jan. 28, 1908.

Application filed April 29, 1907. Serial No. 370,752.

*To all whom it may concern:*

Be it known that I, HERBERT SPENCER POWELL, of Clinton, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Mufflers for Explosive Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 of reference marked thereon, which form part of this specification.

The object of my present invention is to provide an improved construction for mufflers for explosive engines wherein the muffler is constructed in the main of duplicate sections which are adapted to accommodate themselves to the expansion and contraction incident to the heating and cooling, which they of necessity receive, and are adapted to obviate resonance incident to many other constructions.

Figure 1 shows a longitudinal sectional view of a muffler of my present improved construction. Fig. 2 shows an end view of one of the regular sections. Fig. 3 shows an end view of another form of section which may be employed in the construction.

Referring to the reference letters and figures in a more particular description, 1 and 2 indicate two circular flanged heads between which are introduced a series of cup-shaped sections 3, 3 and 4, 4, etc. These sections are of drawn sheet material and have the edge of their walls offset as indicated at 5 whereby the open end is enlarged sufficiently to receive the bottom of the next adjacent section and afford a shoulder on which the adjacent section may rest. The sections 3 are provided with a central opening $3^a$ and a circle of openings $3^b$ around the periphery of the bottom thereof. The sections 4 have the central opening omitted and have a circle of openings $4^b$ around the periphery of the bottom. The sections are nested, as shown in Fig. 1, and bound together by the tie rods 6 which extend longitudinally through the sections and through the heads 1 and 2. These tie rods 6 are preferably inclosed in a tube 7, which serves to protect them from the heat and erosion of the exhaust. The heads 1 and 2 are respectively provided with an opening to which is attached the inlet pipe 10 and the outlet pipe 11. The products of combustion from the engine are received through the pipe 10 and are diffused to some extent in the chambers of the sections 3, 3 and are diffused to a still larger extent in the chambers of sections 4, 4, etc.

This muffler is well calculated to withstand the severe test of expansion and contraction incident to the heat and explosion without rapid deterioration, and is cheaply constructed and assembled. The bottoms of the several sections, which in effect form diaphragms in the muffler, being formed integral with the outer wall, form efficient and rapid heat conductors to the exterior surface, and much radiation may take place. This is an important factor in that rapid radiation is a valuable feature in mufflers.

What I claim as new and desire to secure by Letters Patent is:

A muffler consisting of heads having inlet and outlet openings, respectively, a series of nested sections combined with the heads in an elongated cylindrical form, each section being of cup form having a perforated bottom and the edge offset outwardly to receive the bottom end of the next adjacent section, and tie rods extending longitudinally through the muffler and binding the several sections and the heads together, substantially as set forth.

In witness whereof, I have affixed my signature, in presence of two witnesses, this 24 day of April 1907.

HERBERT SPENCER POWELL.

Witnesses:

GEO. E. RENDELL,

SARAH E. CLARK.