

DE WANE B. SMITH.
MUFFLER FOR EXPLOSIVE ENGINES.
APPLICATION FILED JULY 27, 1907.

932,723.

Patented Aug. 31, 1909.

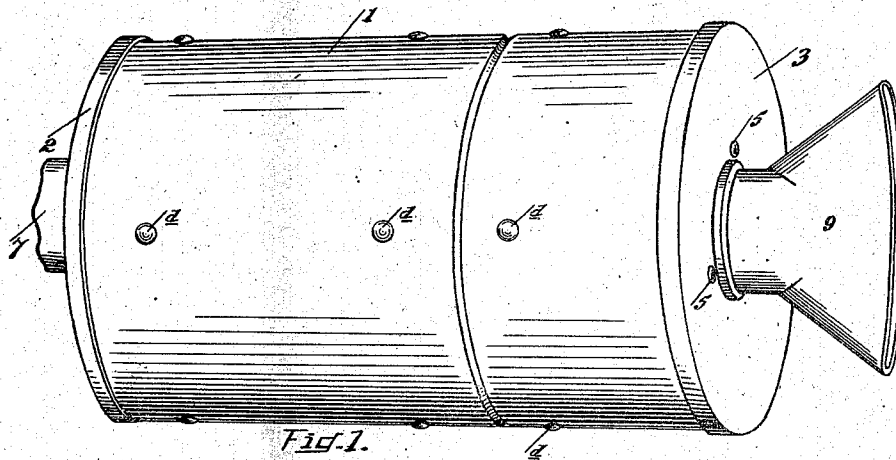


Fig. 1.

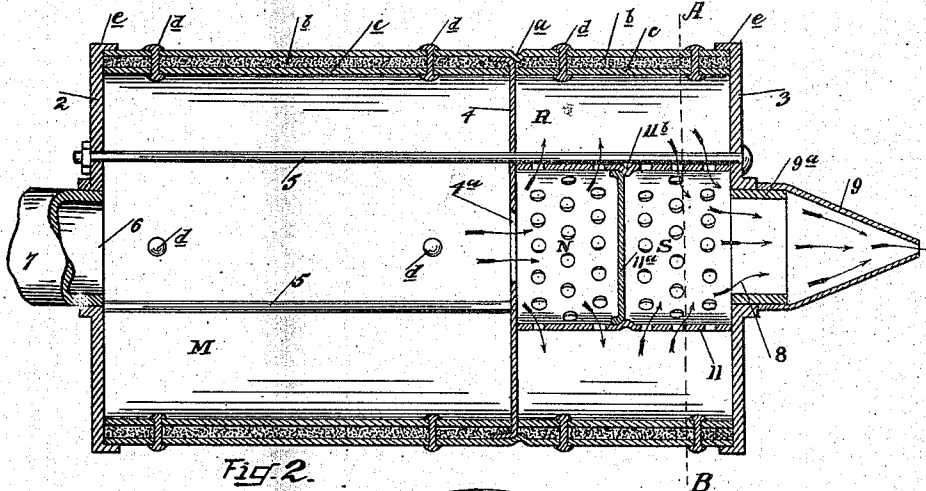


Fig. 2.

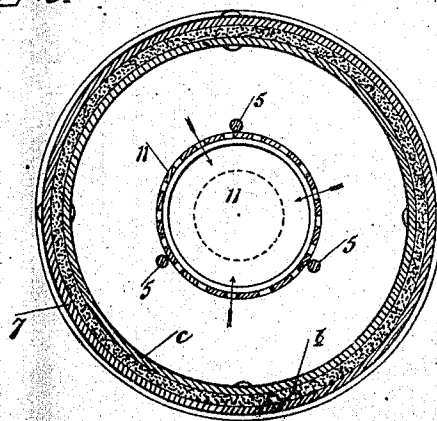


Fig. 3.

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MUFFLER FOR EXPLOSIVE-ENGINES.

932,723.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed July 27, 1907. Serial No. 385,784.

To all whom it may concern:

Be it known that I, DEWANE B. SMITH, of Deerfield, 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 characters of reference marked thereon, which form part of this specification.

The object of my present invention is to provide an improved muffler for explosive engines, which is simple in construction, efficient in operation and not liable to become choked or be damaged by what is generally termed "back fire."

Figure 1 shows a perspective view of a muffler of my present improved construction. Fig. 2 shows a longitudinal section of the same. Fig. 3 shows a cross section taken on line A—B of Fig. 2.

Referring to the reference letters and figures in a more particular description, 1 indicates the outer shell of the body portion of the muffler, which is preferably of a cylindrical form and provided with heads 2 and 3. The cylinder is sub-divided into inlet and outlet portions by a transverse partition 4 preferably located somewhat nearer the exhaust end than the inlet end of the muffler. In order to locate said partition 4, the shell 1 is provided with an internal encircling rib *a* against which the partition 4 finds bearing. The shell 1 on either side of the partition 4 is lined with an asbestos packing *b* and an inner-metal lining *c* more particularly useful for holding the asbestos lining in place, and the lining *c* with the lining *b* are preferably secured to the shell by rivets *d*.

The heads 2 and 3 are each flanged as indicated at *e* to receive the ends of the cylindrical body, and the heads are secured by three longitudinal bolts 5. The head 2 is provided with an inlet opening at 6 to which may be coupled the pipe 7, which connects the muffler with the engine. The head 3 will be provided with a central exhaust opening 8 to which will be attached the fan-tail exhaust nozzle 9, consisting of rather

thin walls diverging in the mesial plane and converging laterally to provide a thin wide opening between more or less elastic walls and mounted or secured on a base ring 9^a, which may be screw-threaded into the opening 8. The main partition 4 is provided with a comparatively large central opening 4^a. Extending between the partition 4 and the head 3 and axially located in the body portion of the muffler is a numerous-perforated, inner cylinder 11. This cylinder incloses the opening 4^a at one end and the exhaust opening 8 at the other, and is held in its axial location by the rods 5, 5. This inner cylinder 11 is also clamped between the wall 4 on the one hand and the head 3 on the other. It is also provided with a middle partition 11^a, which is retained against lateral movement in the cylinder by an internal rib 11^b.

In operation the exhaust entering through the opening 6 has an opportunity to expand in the relatively large inlet chamber M, from whence the gases pass through the opening 4^a into the first chamber M of the inner cylinder 11. Thence they pass radially through the perforation into the encircling chamber R, from which they again pass radially inward into the chamber S. From whence they pass through the exhaust opening 8 into the nozzle 9, from which they are delivered in a thin wide jet. In case the pressure within the nozzle increases, the elasticity of the walls at the discharge end is sufficient to allow them to spring whereby the outlet is increased perceptibly. The chambers in and passages through this muffler are such as not to become readily choked, nor is the muffler liable to some danger by the heat from the exhaust or from "back firing"—in other words, explosions taking place in the muffler. The muffler is very easily made and assembled and is also capable of being taken down and re-assembled with facility by simply removing the nuts from the rods or bolts 5.

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

A muffler consisting of a cylinder and heads having inlet and outlet openings respectively and subdivided by a main, transverse, centrally, perforated partition into inlet and outlet chambers, a fully perforated

cylinder of relatively small diameter having
a middle imperforated partition arranged
longitudinally of and substantially axially
in the outlet chamber and registering at the
5 ends with said opening in the main partition
and with the exhaust opening in the head,
substantially as set forth.

In witness whereof, I have affixed my signature, in presence of two witnesses, this 23d day of July 1907

DEWANE B. SMITH.

Witnesses:

SARAH E. CLARK,
JAMES H. MERWIN.