DE WANE B. SMITH.

MUFFLER FOR EXPLOSIVE ENGINES.

APPLICATION FILED DEC. 13, 1909.

963,822. Patented July 12, 1910.

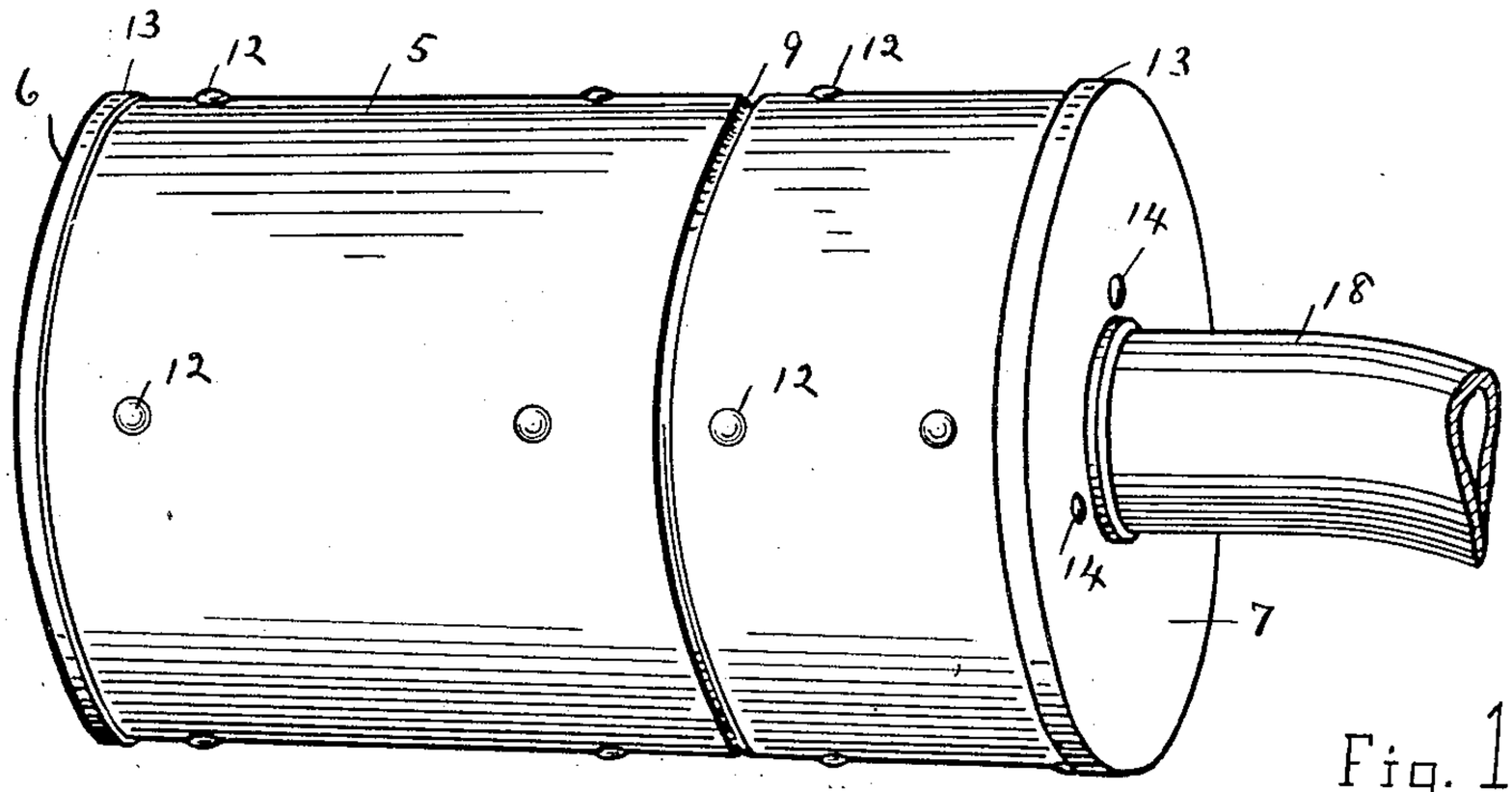

Fig. 1.

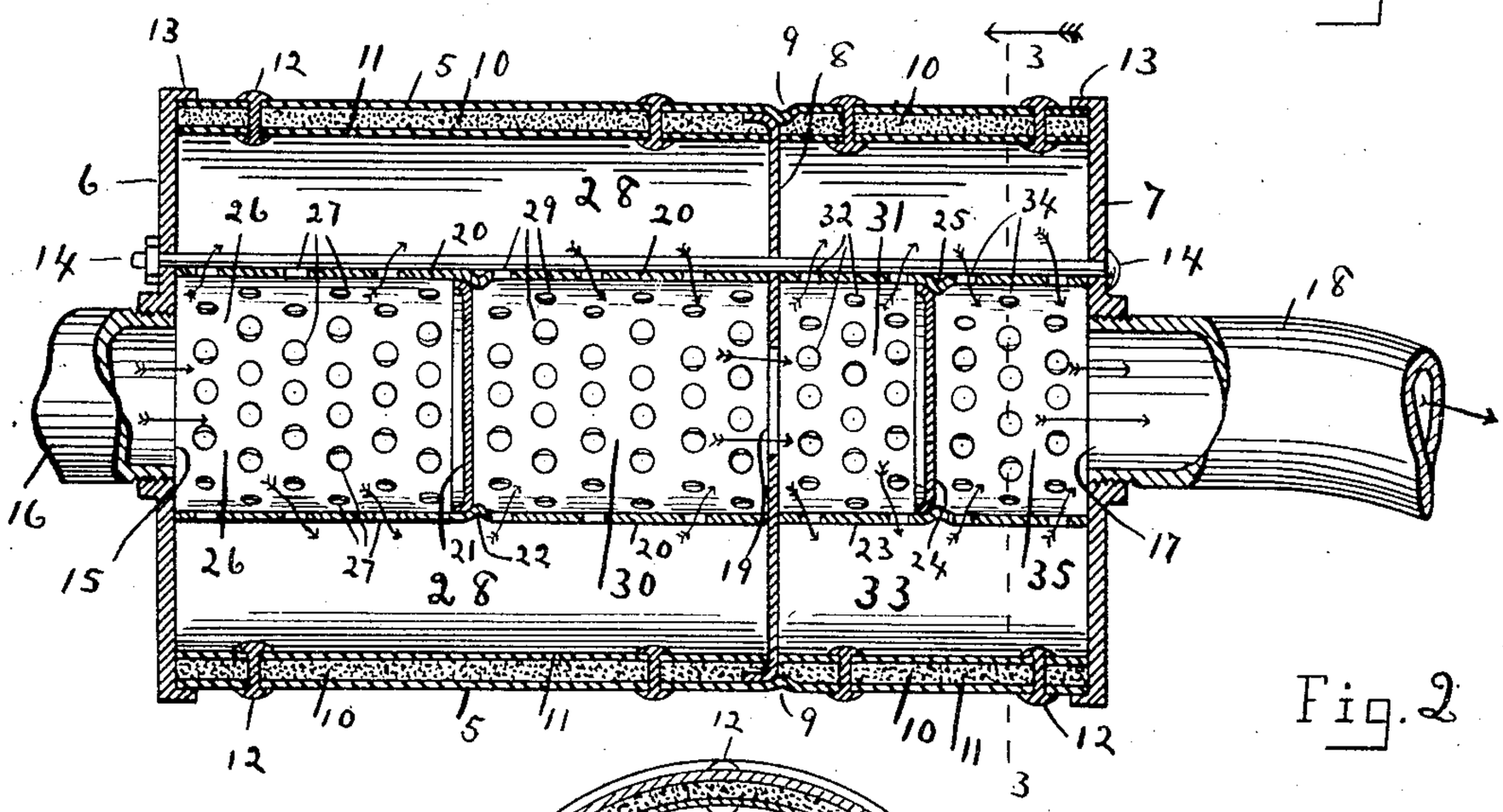

Fig. 2

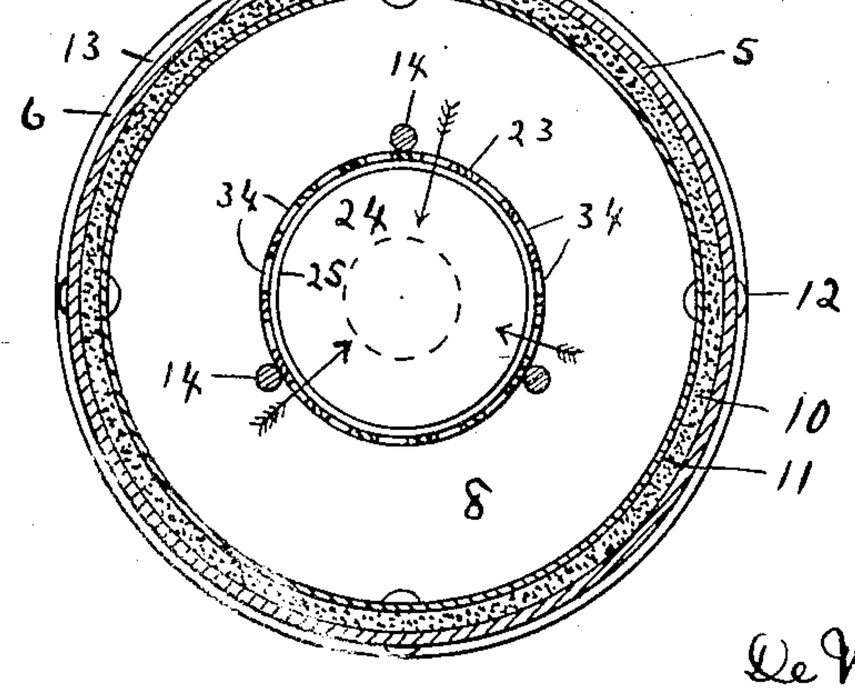

Fig. 3.

WITNESSES:

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DE WANE B. SMITH, OF DEERFIELD, NEW YORK.

MUFFLER FOR EXPLOSIVE-ENGINES.

963,822. Specification of Letters Patent. Patented July 12, 1910.

Application filed December 13, 1909. Serial No. 532,772.

To all whom it may concern:

Be it known that I, DE WANE B. SMITH, a resident 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 reference-numerals 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 lines 3—3 of Fig. 2.

Referring to the reference figures in a more particular description, 5 indicates the outer shell of the body portion of the muffler, which is preferably of a cylindrical form and provided with heads 6 and 7 at the inlet and outlet ends respectively. The cylinder is sub-divided into two three-chambered sections by a transverse partition 8 preferably located somewhat nearer the exhaust end than the inlet end of the muffler. In order to locate said partition 8, the shell 5 is provided with an internal encircling rib 9 against which the partition 8 finds bearing. The shell 5 on either side of the partition 8 is lined with an asbestos packing 10 and an inner-metal lining 11 more particularly useful for holding the asbestos lining in place, and the lining 11 with the lining 10 are preferably secured to the shell by rivets 12. The heads 6 and 7 are each flanged as indicated at 13 to receive the ends of the cylindrical body, and the heads are secured by three longitudinal bolts 14. The head 6 is provided with an inlet opening at 15 to which may be coupled the pipe 16, which connects the muffler with the engine. The head 7 will be provided with a central exhaust opening 17 to which will be attached the outlet pipe 18. The main partition 8 is provided with a relatively large central opening 19. Extending between the head 6 and the partition 8 and axially located in the muffler is a numerously perforated inner cylinder 20. This cylinder incloses the inlet opening 15 at one end and the centrally located opening 19 in the main partition 8 at the other end, and is held in its axial location by the rods 14, 14. This inner cylinder 20 is also clamped between the head 6 and the main partition 8. It is provided with a middle imperforate partition 21 which is retained against lateral movement in the cylinder 20 by an internal rib 22 therein formed. A similarly constructed and axially located inner cylinder 23 extends from the main partition 8 to the head 7, inclosing the opening 19 at one end and the exhaust opening 17 at the other, and provided also with a middle imperforate partition 24 which is similarly retained in position by an internal rib 25 on the cylinder 23.

In operation the exhaust enters the muffler through the inlet opening 15 into the chamber 26 and is first broken up by the imperforate partition 21 which is in the direct course of the exhaust gases. They then escape radially through the numerous openings 27 into the larger expansion chamber 28, in which their course is further changed and they are further broken up by passing thence radially inward through the openings 29 in the cylinder 20 into the chamber 30. Thence they pass easily through the large opening 19 into the chamber 31 of the cylinder 23 in which they are further broken up by contact with the imperforate partition 24 and deflected radially through the numerous openings 32 in said cylinder into the larger expansion chamber 33, where their course is again changed and they are further broken up by escaping radially inward again through the openings 34 into the chamber 35 from whence they pass through the exhaust opening 17 and exhaust pipe 18. The chambers in and passages through this muffler are such as not to become readily choked, nor is the muffler liable to 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 14.

It is evident that the principle herein applied to a muffler can be similarly applied by extending the muffler endwise as far as desired by adding further three chambered sections of which I have used only two, the first of which is composed of the chamber 26, 28 and 30 and the second of chambers 31, 33 and 35, without departing from the spirit of my invention.

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

1. A muffler consisting of a cylinder and heads having inlet and outlet openings respectively and subdivided by one or more main transverse centrally perforated partitions into two or more sections, each section composed of three chambers formed by placing in said sections a fully perforated cylinder of relatively small diameter having a middle imperforate partition, arranged longitudinally of and substantially axially in the said sections and registering at their ends with the inlet and outlet openings and with the said opening in the one or more main partitions, substantially as set forth.

2. A muffler consisting of a cylinder and heads having inlet and outlet openings respectively and subdivided by a main transverse centrally perforated partition into two sections, each section composed of three chambers formed by placing in said sections a fully perforated cylinder of relatively small diameter having a middle imperforate partition, arranged longitudinally of and substantially axially in the said sections and registering at their ends with the inlet and outlet openings and with the said opening in the main partition, substantially as set forth.

In witness whereof, I have hereunto signed my name in the presence of two witnesses.

DE WANE B. SMITH.

Witnesses:
CAROLYN MERWIN,
EMMA S. HESSE.