E. D. L. BOWMAN.

MUFFLER.

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1,222,723. Patented Apr. 17, 1917.

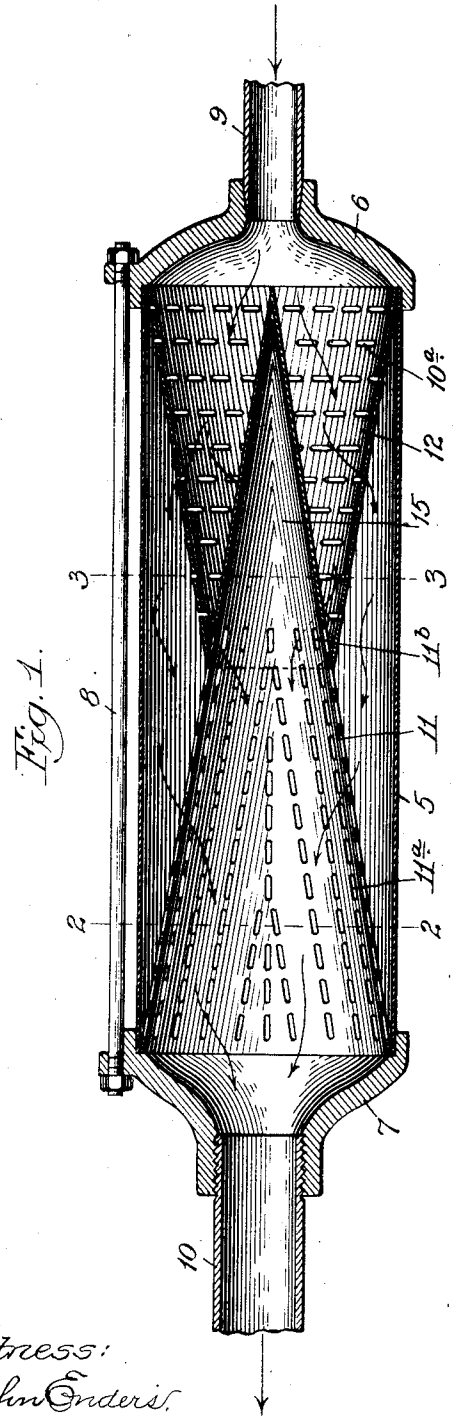


Fig. 1.

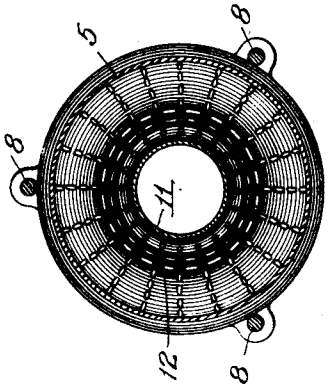


Fig. 3.

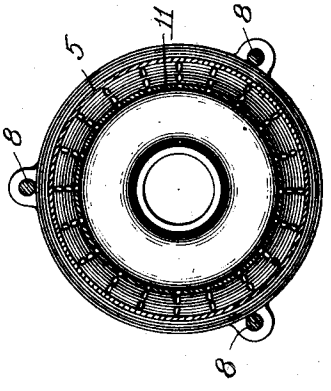


Fig. 2.

Witness:
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UNITED STATES PATENT OFFICE.

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MUFFLER.

1,222,723. Specification of Letters Patent. Patented Apr. 17, 1917.

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To all whom it may concern:

Be it known that I, ERVIN D. L. BOWMAN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mufflers, of which the following is a full, clear, and exact description.

The invention relates to mufflers for explosive engines.

The object of the invention is to provide an improved muffler which is simple in construction and by which the noise will be effectively minimized.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawing: Figure 1 is a section of a muffler embodying the invention. Fig. 2 is a section taken on line 2—2 of Fig. 1. Fig. 3 is a section taken on line 3—3 of Fig. 1.

The body of the improved muffler comprises a cylindrical jacket 5 usually formed of sheet metal, a head 6 at the inlet end and a head 7 at the outlet end of the muffler. The jacket and heads are removably secured together in fixed relation by tie bolts 8 whereby the heads are clamped against the ends of the jacket. A pipe 9 from the exhaust manifold of the engine leads into the head 6 and a pipe 10 leads from the head 7 to the atmosphere, as well understood in the art.

A perforated annular member 12, extends from the head 6 at the inlet end of the muffler to the central portion thereof and is tapered inwardly or from said head toward the center of the muffler. An oppositely tapered conoidal member 11 extends from the head 7 and its point or apex is disposed in member 12. The member 12 is frusto conoidal and its small end joins the periphery of member 11 approximately at the center of the muffler, leaving the imperforate apex portion 15 of member 11 disposed within the member 12. Member 11 is perforated between head 7 and the inner end of member 12 and is provided also with a comparatively small number of perforations 11^b within member 12 adjacent its inner end. These oppositely tapered conoidal members are formed of sufficient length so that they will be held in place by the heads 6 and 7, the smaller end of member 12 fitting around the periphery of the member 11.

As a result of this construction and arrangement of members, the products of combustion entering the muffler through pipe 9 will pass into the larger end of member 12 and outwardly through the perforations 10^a therein to the longitudinally extending chamber formed between the conoidal members and the jacket 5 and thence longitudinally toward member 11 and thence through perforations 11^a into member 11 from which they escape through the pipe 10. The apex portion 15 of the member 11 in the space within member 12 acts to deflect the products of combustion toward member 12, and tends to deaden the noise, because the exit of fluids through the enlarged end of member 11 will tend to create a vacuum in said apex portion. To avoid pressure in the restricted area of the space between the inner end of cone 12 and member 11, perforations 11^b are provided which permit a small volume of the fluid to pass directly from the space within the member 12 into member 11. Most of the products traverse the muffler adjacent the jacket 5 and are cooled in transit through the muffler which also has a tendency to reduce the noise.

The invention thus exemplifies a muffler which is simple in construction and efficient in operation. Sharp divergence of the products in transit through the muffler is avoided throughout and this tends to lessen the noise.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a muffler for explosive engines, the combination of a body having an inlet at one end and an outlet at the other, hollow foraminous inwardly tapering inlet and outlet members in said body, one of the members having hollow deflecting means extending into the other.

2. In a muffler for explosive engines, the combination of a body having an inlet at one end and an outlet at the other, hollow foraminous inwardly tapering inlet and outlet members in said body, one of said members having a tapering portion disposed to outwardly deflect the products of combustion in the inlet member.

3. In a muffler for explosive engines, the combination of a body having an inlet and

an outlet, perforated hollow inlet and outlet members in said body, the inlet member having a conoidal deflect r therein, the deflector having its interior in communication with the chamber in the outlet member.

4. In a muffler for explosive engines, the combination of a body having an inlet and an outlet, a pair of foraminous hollow oppositely and inwardly tapered conoidal members in said body and deflecting means within one of said members.

5. In a muffler for explosive engines, the combination of a body having an inlet and an outlet, hollow oppositely and inwardly tapered perforated conoidal inlet and outlet members, the inlet member having a conoidal deflector therein.

6. In a muffler for explosive engines, the combination of a body having an inlet and an outlet therein, perforated oppositely and inwardly tapered conoidal inlet and outlet members in said body, the outlet member having its apex portion disposed into the inlet member so that said portion will act as a deflector in the latter member.

7. In a muffler for explosive engines, the combination of a body comprising a jacket and a head having an inlet therein, and a head having an outlet therein, a hollow perforated frusto conoidal member extending inwardly from the inlet head and a hollow perforated conoidal member extending inwardly from the outlet head and extended into the other member, so that its inner end will act as a deflector in the latter member.

8. In a muffler, for explosive engines, the combination of a body comprising a jacket and a head having an inlet therein, and a head having an outlet therein, a hollow perforated frusto member extending inwardly from the inlet head and a hollow perforated conoidal member extending inwardly from the outlet head and extended into the other member, so that its inner end will act as a deflector in the latter member, the deflector portion being perforated to permit some products to pass directly from one member into the other.

9. In a muffler for explosive engines, the combination of a body, comprising a cylindrical jacket, an inlet head at one end and an outlet head at the other end, a perforated conoidal wall extending inwardly from the outlet head to a point adjacent the inlet head, and a conoidal wall extending inwardly from the inlet head to the other conoidal member at a point between the ends of the conoidal wall extending inwardly from the outlet and around the smaller end thereof, said reduced end acting as a deflector and having perforations therein adjacent the juncture of the two conoidal walls for the direct passage of fluid from the chamber within one conoidal wall into the other.

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