No. 618,479. Patented Jan. 31, 1899.

E. J. PENNINGTON.

MUFFLER FOR EXPLOSION ENGINES.

(Application filed Dec. 31, 1897.)

(No Model.)

Fig. 1

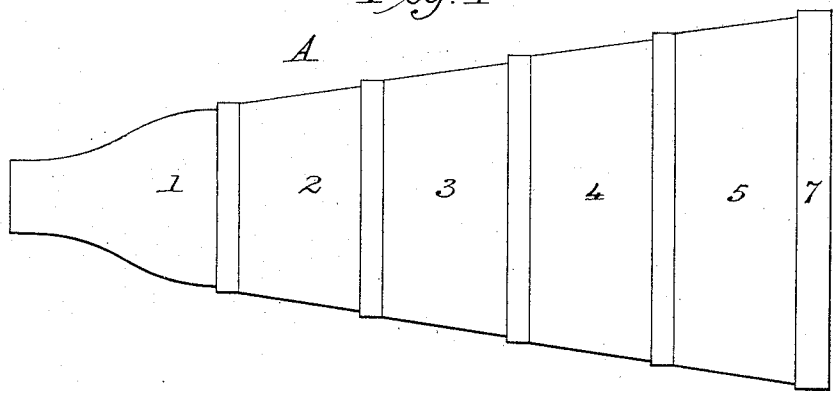


Fig. 2.

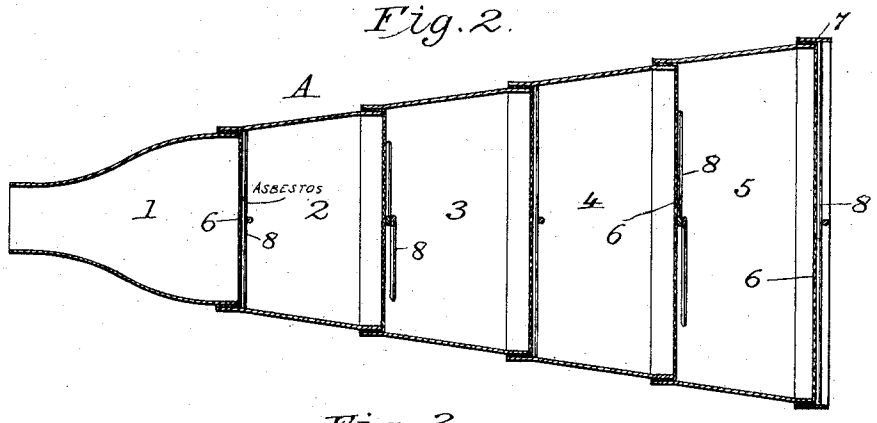
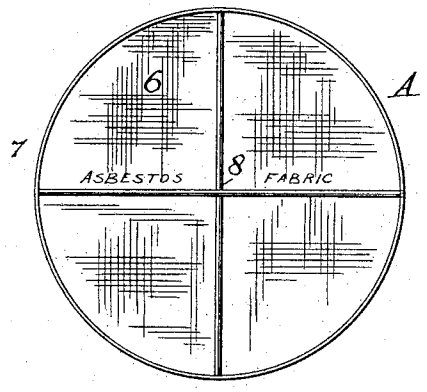


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD J. PENNINGTON, OF WALTON-UPON-THAMES, ENGLAND.

MUFFLER FOR EXPLOSION-ENGINES.

SPECIFICATION forming part of Letters Patent No. 618,479, dated January 31, 1899.

Application filed December 31, 1897. Serial No. 665,086. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. PENNINGTON, a citizen of the United States, residing at Walton-upon-Thames, county of Surrey, England, have invented certain new and useful Improvements in Mufflers for Explosion-Engines, of which the following is a full, clear, and exact description.

This invention relates to means for muffling or deadening the sound of the exhaust of an engine in which the motive force is produced by the explosion of a gaseous body, the ignition of which is usually effected through the medium of an electric spark.

The object of the invention is to obtain a simple and effective muffling device which shall not only muffle or deaden the sound of the exhaust, but also absorb or prevent the odor incident to the exhaust in engines of the character mentioned in which such fluids as gasolene and other oils of like character, light or heavy, are employed; and the invention is also intended to enable the exhaust to be safely conducted without the danger of the ignition and consequent explosion of any gases or matter not entirely consumed during the explosion in the cylinder of the engine. Heretofore, so far as I am advised, these important advantages have not been found in a muffler; but, as is known, the noise of the exhaust in such engines has been one of the salient objections to their use, while the offensive odor and danger of ignition and explosion within the muffler have also added to the objections urged against such engines.

Heretofore it has been found that unconsumed oil has accumulated upon the inner surface of the exhaust-pipe or of the muffler attached thereto and that at times this accumulated oil will become ignited either by sparks or by the great heat generated, with the result that an explosion will occur; and one of the objects of my invention is to prevent such accumulation of oil in such manner as to allow it to be fired or ignited with the dangerous effects mentioned.

In the fuller description of my invention which follows reference is made to the accompanying drawings, in which—

Figure 1 is an exterior view of my improved muffler. Fig. 2 is a longitudinal section thereof. Fig. 3 is a view looking at the larger end of the device.

A shows the muffler, which is made up of the metallic sections 1, 2, 3, 4, and 5, each of which is given a tapering form, so that the whole may be joined together telescopically, as indicated in Fig. 2. Between two of the adjacent sections is placed an asbestos fabric 6. The fabric in each case is cut out into the form of a disk of a diameter suited to the size of the sections between which it is to be secured. Supposing the section of metal 1, constituting a part of the muffler, to be detached from the section 2, a disk 6 of asbestos is fitted over its larger end, after which the smaller end of the metallic section 2 is slipped over the folded-over edge of the disk, as clearly seen in Fig. 2, after which the two sections 1 2 may be riveted or secured together in a suitable manner. In making up the remainder of the muffling device the several metallic sections and asbestos disks are united in the same manner, and at the larger or outer end of the muffler a ring 7 is placed in order to secure the asbestos disk 6 upon the outer end of the section 5.

The asbestos disks 6 may, if desired, be given an outward convexity, although this is not essential, and in my preferred construction the disks are flat.

In order to prevent the bulging or distortion of the asbestos disks by the pressure exerted against them incident to the exhaust, I place in front of each of said asbestos disks a metallic spider 8, which may be secured to the larger of the two uniting sections of metal forming the telescopic joint, although the spiders may be differently arranged.

It has been found that the asbestos disks 6, while not offering any material obstacle to the exhausting gases or any injurious back pressure resulting therefrom, they will absorb any unconsumed oil, which being rapidly distributed over their surfaces will soon become evaporated and escape without any danger of ignition or offensive odor. In some cases I have found it advisable to use two, three, or four layers of asbestos, the thickness of the body of asbestos being dependent upon the

character of the engine and the nature of the oil or fluid employed.

In order to insure the rapid escape of the exhausting gases or bodies, it is advisable that the muffler as a whole shall be given the outward flare indicated; but I do not confine myself to this shape, as it may be cylindrical or of other formation. It is advisable that at the point of connection with the exhaust-pipe the muffler shall rapidly increase in area, so as to prevent back pressure.

It is obvious that my invention will admit of variation in shape and in mode of attachment of the various metallic sections entering into it. The method here shown of building the muffler in sections is obviously one of convenience only, not affecting the operation, and it is within my invention that the sectional construction be discarded, if desired, and a plain funnel-shaped device be employed and the asbestos disks applied thereto and secured therein in any suitable manner.

Having described my invention, I claim—

1. In a muffler for explosion-engines, the combination of a conical chamber comprising the overlapping metallic sections, and a series of asbestos disks secured within the said chamber, substantially as set forth.

2. In a muffler for explosion-engines, the combination of a tapering chamber comprising a series of metallic sections, the inner end of each of said sections overlapping the outer end of the adjacent section, and an asbestos disk clamped between the adjacent ends of the sections, substantially as set forth.

3. In a muffler the combination of a series of metallic sections, a series of asbestos or other flame-proof disks arranged therein, and a spider or guard placed in front of each disk substantially as set forth.

4. In a muffler for explosion-engines, the combination of a conical chamber comprising a series of metallic sections, the inner end of each of said sections overlapping the outer end of the adjacent section, a series of asbestos disks arranged and secured in the said chamber, and a spider or guard secured in front of each disk of asbestos, substantially as set forth.

5. In a muffler for explosion-engines, the combination of a cylindrical chamber comprising a series of metallic sections, the inner end of each of which overlaps the outer end of the adjacent section, an asbestos disk clamped between the adjacent ends of the sections, and a spider or guard secured in front of and bearing against each of the asbestos disks, the inner of the said sections rapidly increasing in area to prevent back pressure, substantially as set forth.

In testimony whereof I hereunto set my hand.

EDWARD J. PENNINGTON.

Witnesses:

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