No. 681,391. Patented Aug. 27, 1901.

J. B. FENNER.

MUFFLER FOR GAS OR OTHER ENGINES.

(Application filed June 15, 1901.)

(No Model.)

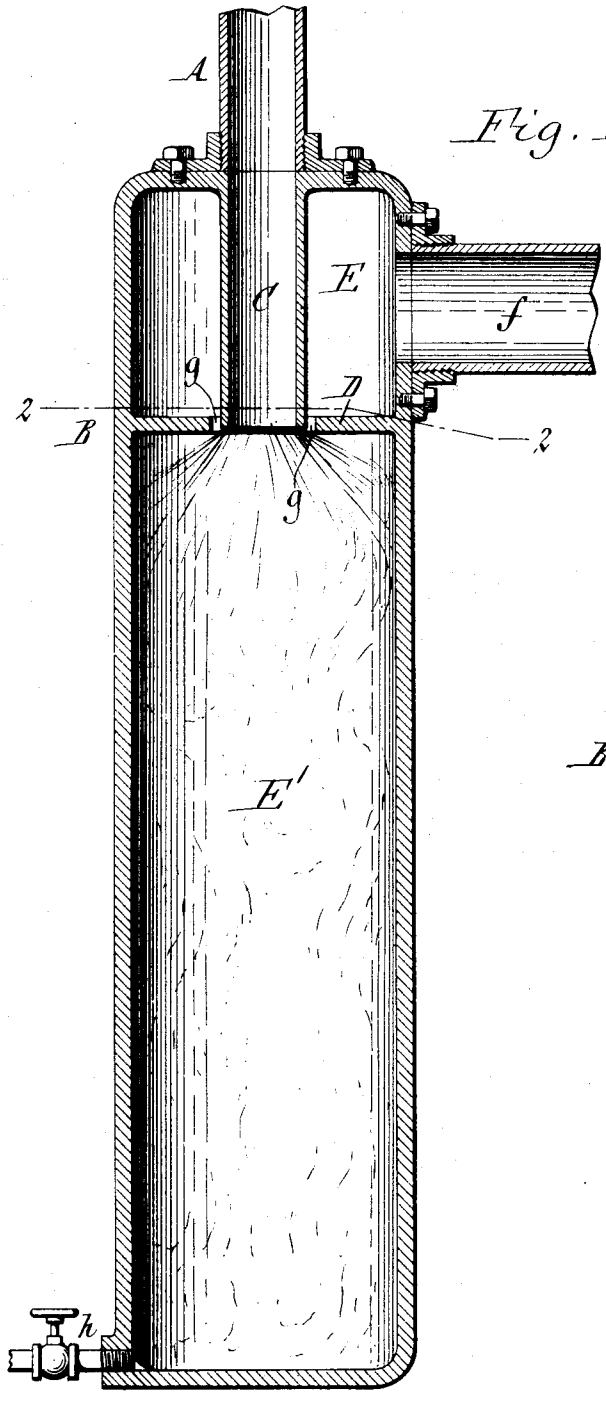
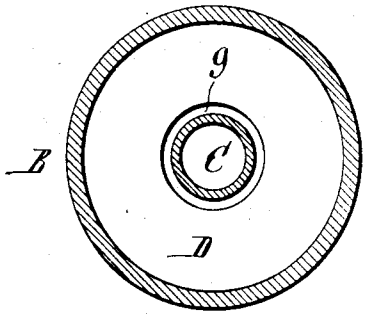


Fig. 1.

Fig. 2.



Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JESS B. FENNER, OF BUFFALO, NEW YORK, ASSIGNOR TO THE J. W. RUGER MANUFACTURING COMPANY, OF SAME PLACE.

MUFFLER FOR GAS OR OTHER ENGINES.

SPECIFICATION forming part of Letters Patent No. 681,391, dated August 27, 1901.

Application filed June 15, 1901. Serial No. 64,625. (No model.)

To all whom it may concern:

Be it known that I, JESS B. FENNER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Mufflers for Gas or other Engines, of which the following is a specification.

The object of my invention is the provision of a simple and effective muffling device for the exhaust of gas and other engines.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved muffler. Fig. 2 is a cross-section thereof in line 2 2, Fig. 1.

Like letters of reference refer to like parts in both figures.

A is the exhaust-pipe of a gas or other engine.

B is the body or case of my improved muffler, which may be of any suitable form, but which is preferably cylindrical and comparatively long in proportion to its diameter. The case B is closed on all sides and at its lower end. At its upper end the case is provided with a central inlet-tube C, which extends inwardly from the adjacent head thereof and with which the exhaust-pipe A of the engine is connected.

D is a diaphragm or partition arranged in the case B at a short distance from its upper or inlet end and dividing the same into an exit-chamber E and a comparatively long expansion-chamber E'. This expansion-chamber is of sufficient size to receive a full exhaust charge. The exit-chamber E is provided with an exit-pipe *f*, which opens into the atmosphere. The lower end of the inlet-tube C extends into or through an opening formed centrally in the diaphragm D, which opening is somewhat larger than the inlet-tube, so as to leave a narrow annular passage *g* between the tube and the edge of the opening through which the exhaust escapes from the expansion-chamber E' into the exit-chamber E. The diaphragm D has no passages or perforations except the annular central passage *g*, thus compelling the products of combustion to escape through a single passage contiguous to the delivery end of the inlet-tube C.

h is a valved drain-pipe arranged at the lower end of the expansion-chamber E', through which the collected moisture from the gases may be drawn off from time to time.

In the use of the muffler the exhaust issuing from the inlet-tube C under pressure suddenly expands into the expansion-chamber and spends its force, and as this chamber is closed on all sides except at the inlet-tube C the sound is effectively muffled. Immediately after expanding in the chamber E' the gases escape through the annular diaphragm-passage *g* into the exit-chamber E and from the latter through the exit-pipe *f* into the atmosphere. By locating the passage *g* immediately adjacent to the inlet-tube C the gases do not double the end of the pipe immediately on entering the expansion-chamber and escape directly into the exit-chamber E', but are impelled laterally across said passages and expand in the expansion-chamber before reversing their course and escaping from said chamber. The sheet of incoming gas at the lower end of the inlet-tube forms a "cut-off," so to speak, which momentarily imprisons the exhaust charges in the expansion-chamber.

The best results have been obtained with my muffler by extending the lower end of the inlet-pipe C into the opening of the diaphragm D, but not below the latter, as shown in Fig. 1.

Although the engine-exhaust is delivered intermittently or by impulses into the muffler the gases are delivered continuously from the exit-pipe *f*, owing to the cushion formed in the expansion-chamber, thereby avoiding the noise ordinarily produced by the exhaust.

I claim as my invention—

1. A muffler for the exhaust of gas and other engines, consisting of a case having a diaphragm which divides the same into an expansion-chamber and an exit-chamber and which is provided with an opening, and an inlet-tube for the engine-exhaust having its delivery end arranged in said opening and separated from the edge thereof by an intervening exit-passage, substantially as set forth.

2. A muffler for the exhaust of gas and other engines, consisting of a case having a dia-

phragm which divides the same into an expansion-chamber and an exit-chamber and which is provided centrally with a circular opening, and an inlet-tube for the exhaust which extends through said exit-chamber into said diaphragm-opening and which is smaller in diameter than said opening, leaving an annular exit-passage around the delivery end of the inlet-tube, substantially as set forth.

Witness my hand this 22d day of May, 1901.

JESS B. FENNER.

Witnesses:

THEO. L. POPP,

CARL F. GEYER.