No. 806,715. PATENTED DEC. 5, 1905.

N. W. H. SHARPE.

SILENCER FOR INTERNAL EXPLOSION ENGINES.

APPLICATION FILED MAR. 29, 1905.

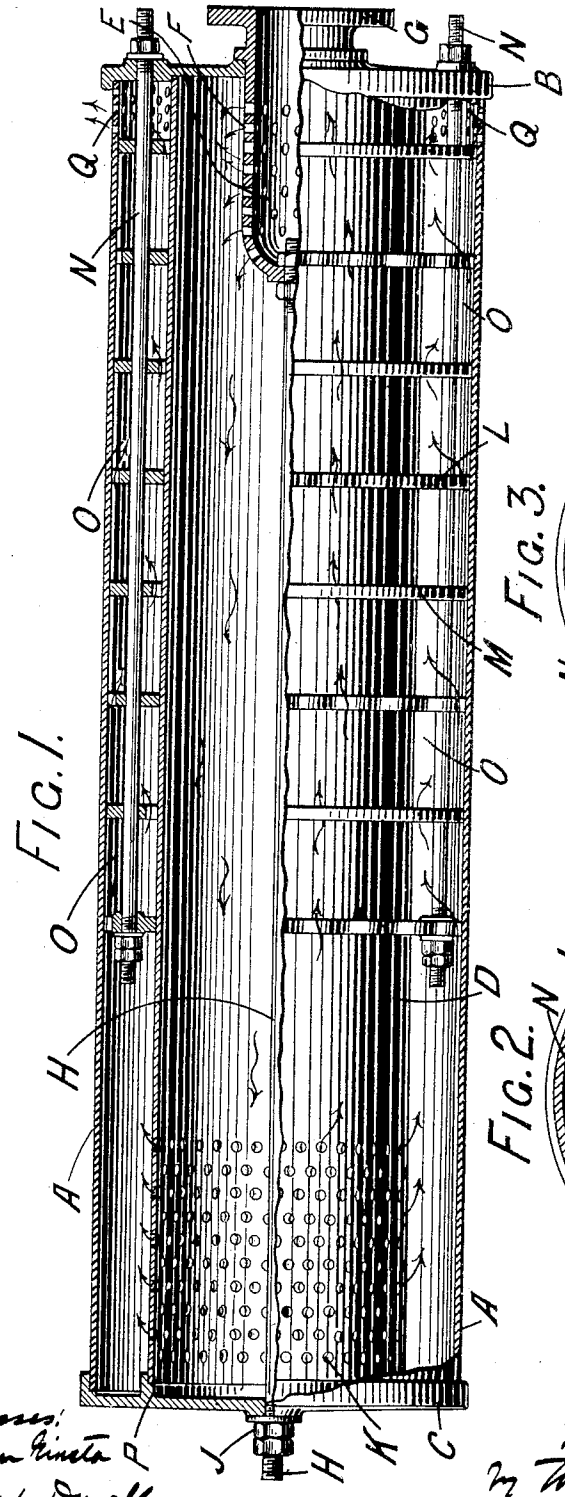


FIG. 1.

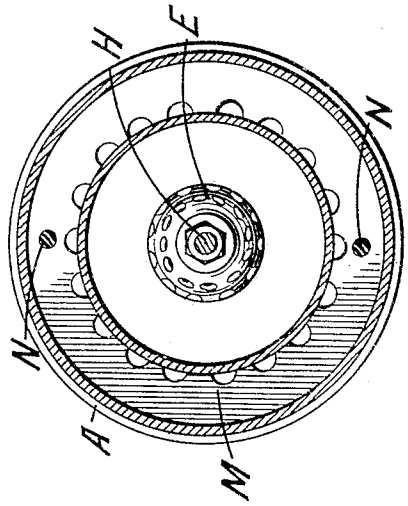


FIG. 3.

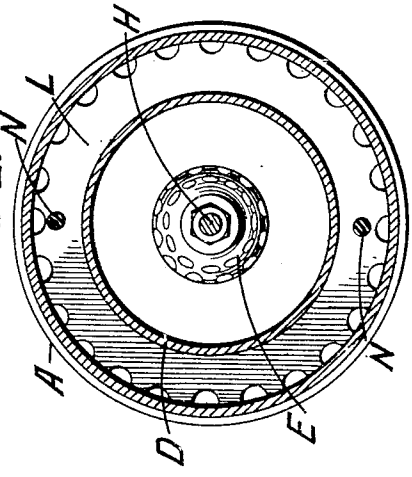


FIG. 2.

Witnesses:
Stephen Sinata
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UNITED STATES PATENT OFFICE.

NATHAN W. H. SHARPE, OF LONDON, ENGLAND.

SILENCER FOR INTERNAL-EXPLOSION ENGINES.

No. 806,715. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed March 29, 1905. Serial No. 252,777.

To all whom it may concern:

Be it known that I, NATHAN WILLIAM HORATIO SHARPE, a subject of the King of Great Britain, residing at London, England, have invented certain new and useful Improvements in Silencers for Internal-Explosion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to simple means for breaking up and gradually cooling the exhaust-gases from internal-explosion engines a number of times until their explosive character has become entirely destroyed, the remnant of the exhaust then passing noiselessly out into the atmosphere. The construction of the said means is so simple that the entire interior parts can be readily withdrawn for cleaning by simply unscrewing a nut.

I will now proceed to fully describe my invention, reference being made to the accompanying drawings, in which—

Figure 1 is a longitudinal view of the invention, partly in section and with a part of the interior fittings longitudinally cut away. Figs. 2 and 3 are detached views of parts embodied in the previous figures.

The invention consists of an outside tube-case A, closed at both ends by caps B C. Within the tube is carried an inner tube D of less diameter to leave an annular space all round. The ends of this inner tube are open and enter a circular raised recess P on the inside of caps B C. Passing tight through cap B and into the tube D is a nozzle E, closed at bottom, the portion coming within the tube being perforated with numerous small holes F. The outside of this nozzle is formed with a flange G for connection with exhaust-pipe from engine. The caps B C are drawn onto the ends of tubes A and B by a central draw-rod H, having one end connected to the bottom of the nozzle E by inner and outer nuts and the outside end by nuts J. The inner tube D near one end is perforated with numerous small holes K.

Fitted upon the outside of the inner tube D are several rings L and M, which can be secured in position by draw-rods N, secured at their ends by nuts. Upon these rods between each ring is placed a short length of tube O as distance-pieces. The peripheries of the rings L and M fit the inside of outer tube A and those of rings L being formed with a number of notches and the alternate rings M with inside notches.

To enable the silencer to be taken apart for cleaning, it is only necessary to unscrew the nuts J, when the interior part can be drawn out with the cap B.

The silencer works as follows: The exhaust-gases from engine first pass into nozzle E and are at once broken up into small streams by passing out of holes F into the tube D, when the streams expand and are somewhat cooled and pass down the tube D and out at the bottom through holes K, which again break the gases up into numerous small streams, and these by impinging against the wall of case A become considerably cooled and expanded. They then pass through the notches on the periphery of the rings L, thereby again becoming broken up and somewhat cooled by expanding in the space between the rings and by contact with the wall of case A, the gases being then again broken up into small streams by passing through the inner notches in ring M, and in this way pass over and under the rings through the silencer, finally exhausting through a number of holes Q at top end of case A, passing noiselessly out into the atmosphere and without explosive vibration. The size of the notches in the several rings decrease in size, being largest in the rings that first meet the exhaust and smallest in the last ones.

Having now described my invention, what I desire to claim is—

1. In a silencer for internal-combustion engines, the combination of parallel concentric tubes provided with openings located near their opposite ends respectively, and an inlet-tube entering the inner tube substantially parallel therewith and provided with a number of openings, and means located between said first-named tubes for separating the discharge into small streams, substantially as described.

2. In a silencer for internal-combustion engines, the combination of two concentric tubes perforated near their opposite ends respectively, an inlet-tube entering the inner tube and provided with perforations and located substantially parallel to said inner

tube, and a series of perforated diaphragms located between said first-named concentric tubes, substantially as described.

3. In a silencer for internal-combustion engines, the combination of two concentric tubes provided with perforations near their opposite ends respectively, an inlet-tube entering the inner tube and substantially parallel therewith, a series of perforated diaphragms located between said first-named tubes, and longitudinally-arranged rods and nuts for fastening the tubes and diaphragms together, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

NATHAN W. H. SHARPE.

Witnesses:
H. D. JAMESON,
R. F. WILLIAMS.