

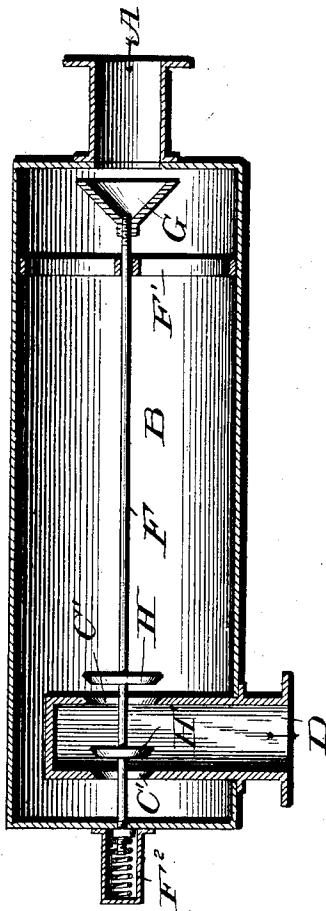
No. 733,330.

PATENTED JULY 7, 1903.

A. G. NEW.
MUFFLER.

APPLICATION FILED DEC. 30, 1899.

NO MODEL.



Witnesses

L. C. Hills.
R. A. Russ.

Inventor:

Anthony G. New

By Caldwell & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ANTHONY GEORGE NEW, OF WOKING, ENGLAND.

MUFFLER.

SPECIFICATION forming part of Letters Patent No. 733,330, dated July 7, 1903.

Application filed December 30, 1899. Serial No. 742,117. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY GEORGE NEW, a subject of the Queen of Great Britain, residing at "The Voltage," Woking, in the county of Surrey, England, have invented certain new and useful Improvements in Mufflers; 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.

My invention relates to certain new and useful improvements in gas-engines, and especially to that part of a gas-engine known as the "muffler," which has for its object to prevent or reduce any noise from being caused by the exhaust-gases issuing from oil or gas engines and the like to the atmosphere, and is particularly applicable for use on motor-driven vehicles propelled by such engines. Hitherto the exhaust-gases have usually been lead through a suitable pipe from the exhaust-valve to a box or muffler and there allowed to expand while passing through free or baffled passages in it and have then been free to escape into the atmosphere. In order to render the gases noiseless, in most cases large or complicated exhaust-boxes have been necessary, as otherwise the velocity at which the gases issue from the box is sufficiently high to create noise.

The present invention consists in a valve or its equivalent which is capable of completely closing the passage through which the exhaust-gases issue from the exhaust-box to the atmosphere and which is so arranged that it closes that passage during the period at which the exhaust-gases would otherwise issue noisily and opens it when their velocity has more or less subsided during each cycle of operations of the engine.

By the use of this device a smaller and less-complicated exhaust-box may be employed and a more effective silencing obtained.

In certain cases a second box may be advantageously employed to receive the gases which issue from the valve at the exit from the first box, this second box being similarly provided with a controlling-valve in its exit-passage. Any number of boxes may be added in this manner.

In cases where more than one engine-cyl-

inder is working and when the explosions of each are non-coincident separate boxes with valves may preferably be used; but if only one box or series of boxes is used for a two-cylinder engine of this kind then the valve or valves would be arranged to open and close twice during each cycle of the engine.

I prefer to actuate the valve in such a manner that it closes suddenly and opens gradually; but I may vary the rapidity, as also the relative moments, of either of its actions to suit individual requirements.

Referring to the accompanying drawing, forming part of this specification, the figure shown represents a central longitudinal sectional view of a muffler embodying my invention.

In the drawing, B is a chamber, into which the exhaust-gases are led from the engine through the pipe A. The only means of escape from the chamber B is through the passage or pipe D, which is controlled by a valve or valves, as shown. A pair of valves H H' are fixed upon a spindle F, which is carried in suitable bearings or guides F' and is provided at the one end with a funnel-shaped mouth G, located near the inlet-pipe A, but removed therefrom, and at the other end with a spiral spring F², which tends to keep the sliding spindle F in the position shown. The passage D is provided with openings C' C' into the chamber B, and these openings are so shaped and arranged that the valves H H' can completely close them if the spindle F be moved longitudinally in its bearings or guides (from right to left) against the action of the spiral spring F².

The manner in which this automatic device works is as follows: When during the exhaust-stroke of the engine the exhaust-gases enter the chamber B, they impinge upon the funnel-mouth G, thereby causing the spindle F to slide longitudinally from right to left, and consequently close the openings C' C'. The exhaust-gases, therefore, are unable to escape from the chamber B until their action upon the funnel-mouth G has ceased and until the spring F² has been able to cause the spindle F to return to its original position. The valves H H' are then removed from the openings C' C', and the gases are enabled to escape to the atmosphere.

The velocity at which the gases escape will be less than that at which they enter the chamber B, owing to their temporary detention.

5 In certain cases I prefer to construct the valve H' smaller than the valve H, because the pressure of the gases in the chamber B then opposes the action of the spring F² until that pressure has subsided to the desired
10 extent. By this means the valves H H' remain closed for a longer period than they otherwise would.

It will be understood that by varying the relative sizes of the valves H H' and the
15 strength of the spiral spring F², I am able to control the period during which the exhaust-gases are confined in the chamber B.

Having fully described my invention, what I claim as new, and desire to secure by Letters
20 Patent, is—

1. In a device of the character described, a chamber having an inlet-opening, an outlet-pipe projecting within the chamber and provided with valve-seats in oppositely-disposed openings, guides in the chamber, a rod
25 extending through said openings and slidably mounted in the guides, a pair of valves of different sizes mounted on the rod and adapted to close the openings in the outlet-pipe, a funnel-shaped mouth-plate also mounted on
30 the rod and located near the inlet-opening, and means for giving the rod a pressure in a direction to normally open the valves, substantially as described.

35 2. In a device of the character described, a chamber having inlet and outlet openings, a movable baffle-plate arranged in front of the inlet-opening and normally standing at a slight distance therefrom, a spring-pressed
40 valve located in front of the outlet-opening and normally standing away therefrom, and means connecting the baffle-plate with the valve whereby a rearward movement of the baffle-plate closes the valve.

45 3. In a device of the character described, a chamber having inlet and outlet openings, a spring-pressed rod slidably mounted therein, a funnel-shaped baffle-plate secured to the rod with its flaring part located in front
50 of the inlet-opening and normally standing

at a short distance therefrom, and a valve on the rod to close the outlet-opening when the baffle-plate is moved backward.

4. In a device of the character described, a chamber having an inlet-opening, an outlet-pipe projecting within the chamber and provided with valve-seats in oppositely-disposed openings, guides in the chamber, a rod
55 extending through said openings and slidably mounted in the guides, a pair of valves mounted on the rod and adapted to close the openings in the outlet-pipe, a funnel-shaped mouth-plate also mounted on the rod and located near the inlet-opening, and means for
60 giving the spindle a pressure in a direction to normally open the valves, substantially as described.

5. In a device of the character described, a chamber having an inlet-opening, an outlet-pipe projecting within the chamber, a rod
70 slidably mounted within the chamber, a valve carried by the rod and adapted to close an outlet-opening in the outlet-pipe, and a funnel-shaped mouth-plate mounted on the end of the rod and located near the inlet-opening, substantially as described.

6. In a device of the character described, a chamber having an inlet-opening, an outlet-pipe projecting within the chamber with its inner end closed and an outlet-opening in
80 its side, a spring-pressed rod slidably mounted within the chamber, a valve on the rod to close the outlet-opening, and a baffle-plate on the rod near the inlet-opening.

7. In a device of the character described, 85 a chamber having an inlet-opening, an outlet-pipe projecting within the chamber and provided with oppositely-disposed valve-seats, a rod slidably mounted within the chamber, a pair of valves of different sizes
90 mounted on the rod and adapted to close the valve-seats of the outlet-pipe, and a baffle-plate carried by the rod near the inlet-opening, substantially as described.

In testimony whereof I affix my signature 95 in presence of two witnesses.

ANTHONY GEORGE NEW.

Witnesses:

EDMUND S. SNEWIN,
WM. O. BROWN.