

O. Z. FRAZIER.
MUFFLER.
APPLICATION FILED JAN. 31, 1913.

1,062,092.

Patented May 20, 1913.

2 SHEETS—SHEET 1.

Fig. 1

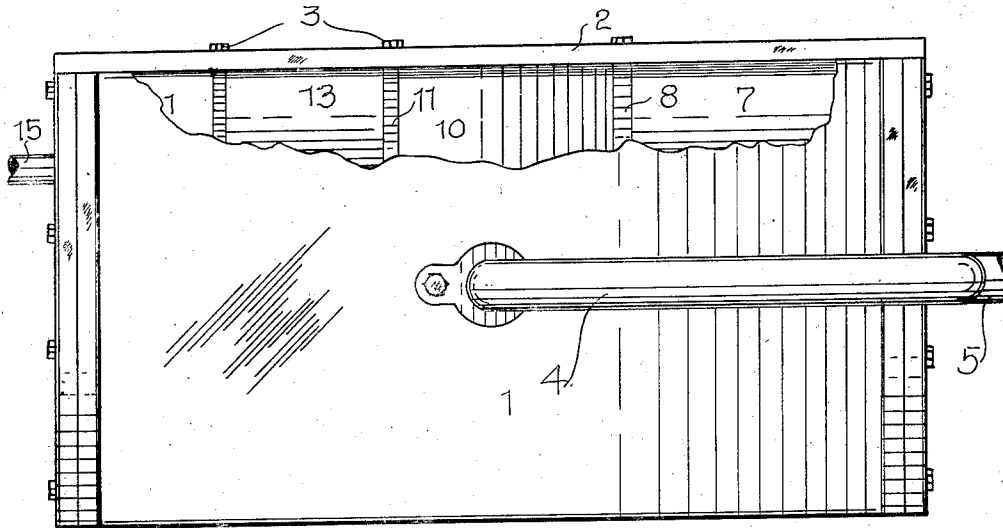
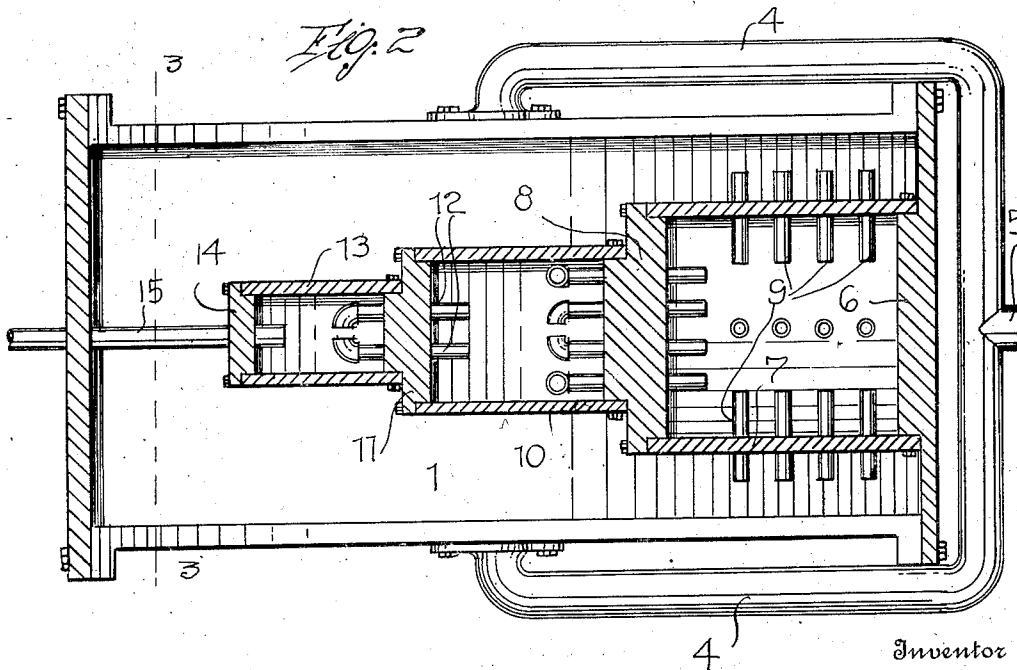


Fig. 2

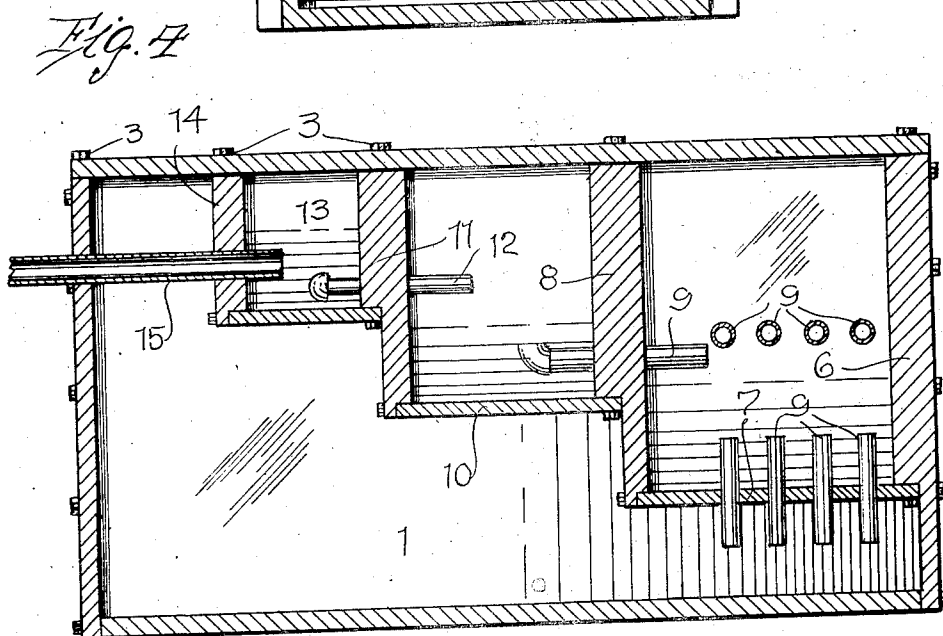
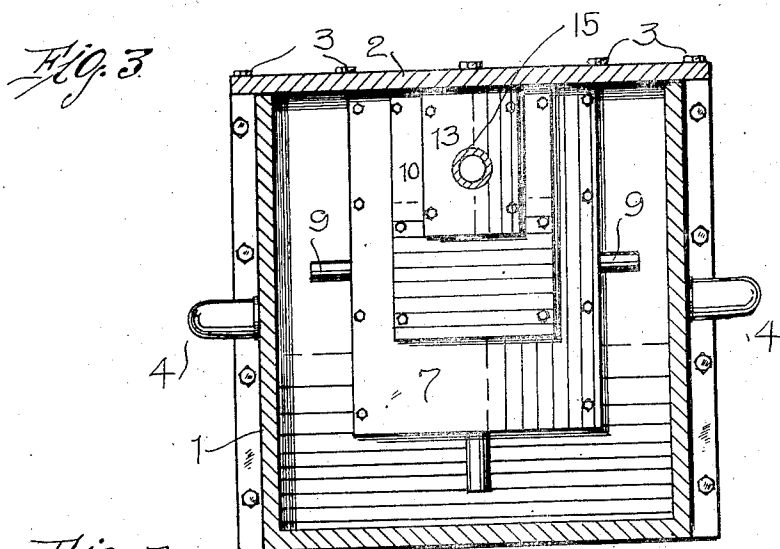


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MUFFLER.

1,062,092.

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To all whom it may concern:

Be it known that I, ORVILLE Z. FRAZIER, a citizen of the United States, residing at Elkhart, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Mufflers, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to new and useful improvements in silencers and more particularly to a muffler for gas engines and my object is to provide a device of this character which will be most effective in carrying out the object for which the same is designed.

A further object of the invention resides in providing a device in which the exhaust gases may be permitted to expand in their course through the muffler, thereby preventing back pressure and a still further object resides in providing a muffler composed of an outer casing in which there are arranged a plurality of communicating chambers graduating in size.

Still another object of the invention resides in providing a device which is simple and durable in construction, inexpensive to manufacture and one which will be very efficient and useful in operation.

With these and other objects in view, the invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings forming a part of this application, Figure 1 is a side elevation of the device partly in section. Fig. 2 is a plan view of the same with the top removed and parts in section. Fig. 3 is a vertical transverse section therethrough as seen on line 3—3, Fig. 2. Fig. 4 is a vertical longitudinal section through the device.

In describing my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views and in which 1 indicates a housing or casing, the lid or top 2 of which is removably secured thereto by means of bolts 3 and extending into the side walls of said housing or casing, are the branch discharge pipes 4, which lead to a main discharge 5. The inner face of the end wall or head of said casing or housing 1, has a portion thereof increased in thickness from its upper end to a point adjacent the

lower end thereof, as shown at 6, said increased portion having parallel side edges to provide shoulders on this end wall or head. Engaged with and secured to the lower and side edges of the increased portion 6, which are actually shoulders on said end wall, are the side and bottom walls of an additional chamber 7, the side walls extending up to a plane parallel with the plane of the upper edges of the side and end walls of the casing 1. Secured to the opposite ends of the side and bottom walls of this chamber, is an end wall or head member 8 which is offset adjacent its edges to receive therein the ends of said side and bottom walls. Threaded into the side, bottom and last mentioned end wall of the chamber 7, are a plurality of discharge pipes 9 which have portions extending within said chamber and portions disposed outside of the same. The outer face of the end wall 8 of the chamber 7 is also increased in thickness similar to the increased portion 6 of the end wall of the housing 1, and the shoulders formed thereby receive thereagainst the side and bottom walls of an additional chamber 10. An outer end wall 11 similar to the wall 8 is secured to the side and bottom walls of said chamber 10 and the upper edges of the side and end walls of this last mentioned chamber extend to the same horizontal plane as the upper edges of the chamber 7. This last mentioned chamber 10, of course, receives therein the ends of the discharge pipes 9 which extend through the end wall 8 hereabove referred to and also disposed through the end wall 11 and threaded therein are the additional discharge pipes 12, portions of which extend within, and portions beyond said chamber.

The outer face of the end wall 11 is also increased in thickness similar to the end wall 8, this increased portion extending to a point above the lower edge of the wall proper and engaged with the side and bottom edges of said increased portion are the bottom and side walls of an additional chamber 13. An end wall 14 is provided for this last mentioned chamber, through which extends the inlet pipe 15, the latter also extending through the adjacent end wall of the casing or housing 1. The chamber 13, therefore, receives therein the one end of the inlet pipe 15 and also the ends of the discharge pipes 12. The upper edges of the side and end walls of the chamber 13, also

extend to the same horizontal plane as the upper edges of the aforesaid chambers and thus it will be seen that said upper edges contact with the lid 2 when the latter is applied to the housing 1. It will, however, be seen that the various chambers are graduated in size and communicate with one another through the medium of the aforesaid discharge pipes.

10 In practice, the exhaust gases are conducted through the exhaust inlet pipe 15 to the smallest chamber 13. As the gases expand therein, the same are conducted through the medium of the aforesaid pipes 15 12 into the larger chamber 10 wherein they are allowed to expand to a greater degree. From this chamber the gases are conducted through the medium of the pipes 9 in the end wall 8 to the still larger chamber 7, 20 wherein the gases are allowed to expand to a greater extent. Said gases are then conducted through the medium of the additional pipes 9 in the side and bottom walls of the chamber 7 to the main chamber 1, 25 wherein the same are expanded to such a degree as to prevent all possible back pressure and are discharged through the branch pipes 4 to the main discharge 5. Through the medium of this construction, the gases 30 are allowed to expand gradually in the graduating chambers, thereby preventing back pressure and at the same time all noise incident to the exhausting of gases from a gas engine will be positively silenced.

35 From the foregoing it will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention and while I have particularly described the elements best adapted to

perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described this invention, what I claim is:—

1. A muffler comprising a main casing, a plurality of chambers arranged therein, said chambers being graduated in size and having the upper edges thereof in the same horizontal plane as the upper edges of the side and end walls of said main casing, communicating means between said chambers and the main casing, means to supply exhaust gases to the smallest chamber, and discharge pipes leading from said main casing.

2. A muffler comprising a main casing, a plurality of graduating chambers arranged therein, said chambers being increased in size downwardly, the one end wall of said casing forming the one end wall of the largest of said chambers, and the one end wall of each of said chambers forming an end wall for each successive chamber, communicating means between said chambers and said main casing, means to supply exhaust gases to the smallest of said chambers, and discharge pipes leading from said main casing.

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

ORVILLE Z. FRAZIER.

Witnesses:

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