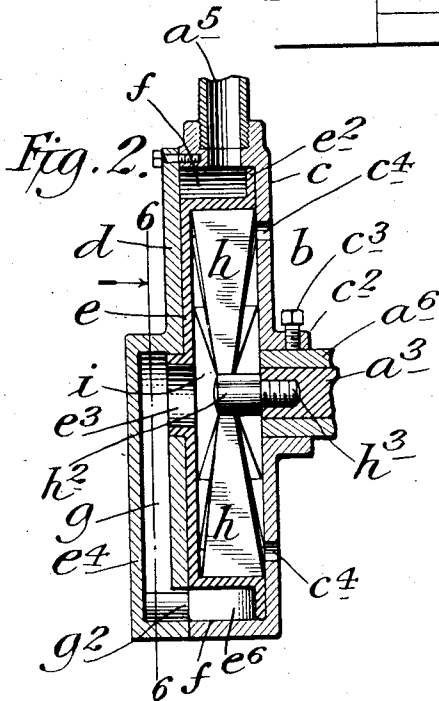
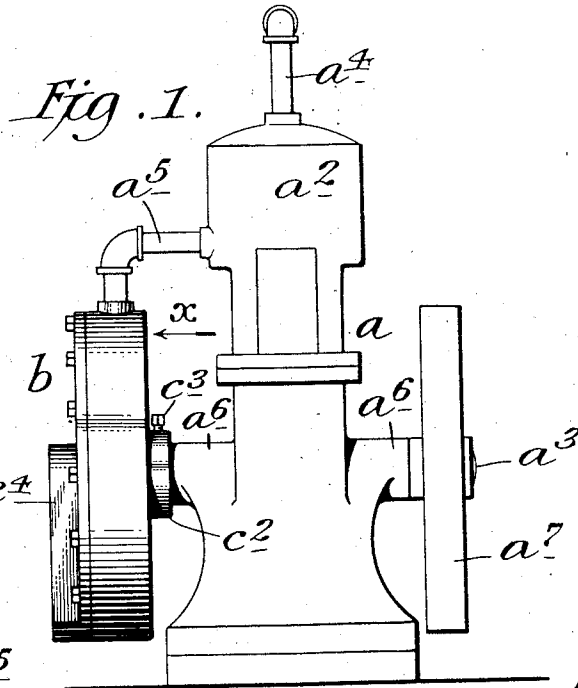


G. LEWIS.
 ROTARY POWER MUFFLER.
 APPLICATION FILED SEPT. 3, 1910.

997,624.

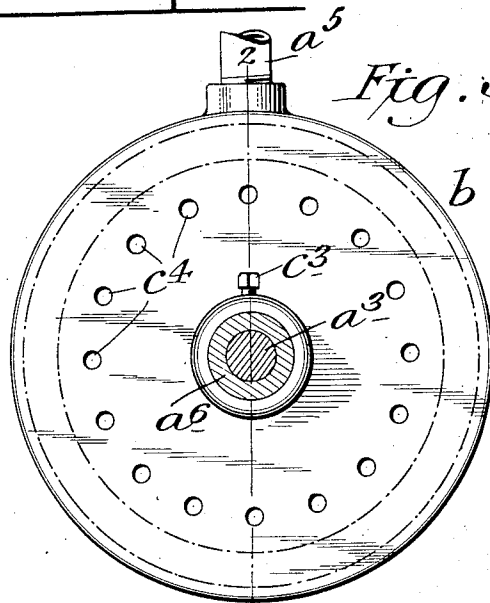
Patented July 11, 1911.

2 SHEETS—SHEET 1.



WITNESSES

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2

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997,624.

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2 SHEETS—SHEET 2.

Fig. 4.

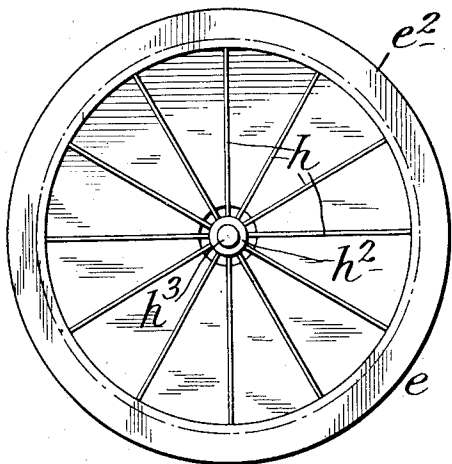


Fig. 5.

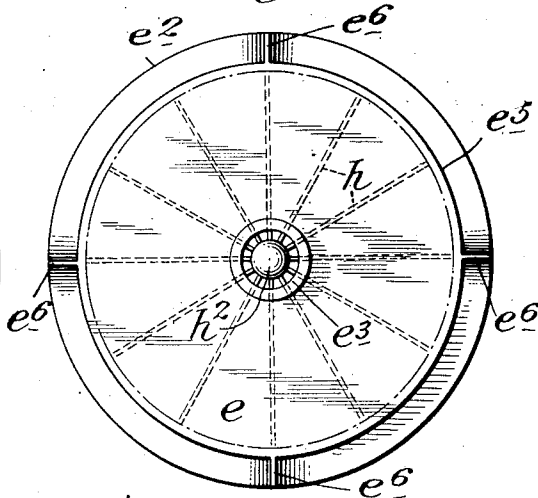


Fig. 6.

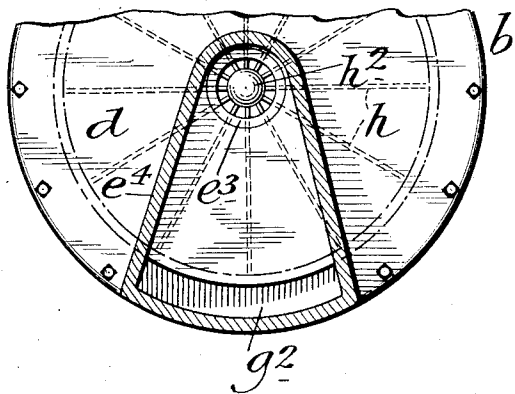
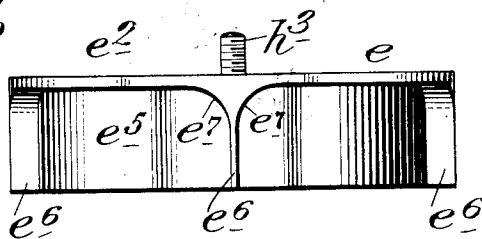


Fig. 7.



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ROTARY POWER-MUFFLER.

997,624.

Specification of Letters Patent. Patented July 11, 1911.

Application filed September 3, 1910. Serial No. 580,400.

To all whom it may concern:

Be it known that I, GEORGE LEWIS, a citizen of the United States, and residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Rotary Power-Mufflers, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to mufflers for explosion engines, or internal combustion engines, and the object thereof is to provide an improved device of this class which may be connected with the cylinder of the engine in any desired manner and which will operate to exhaust the exploded or burned gases from the cylinder, also to deaden the sound produced by the exhaust and to prevent, to a large extent, the escape or discharge of said gases into the air in visible form; a further object being to provide a muffler for inventions of the class specified by means of which the exhaust will be utilized to aid in driving the engine.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a side view of an internal combustion engine and showing my improved rotary muffler connected therewith; Fig. 2 a central vertical section of the muffler taken on the line 2—2 of Fig. 3; Fig. 3 a side view of the muffler looking in the direction of the arrow x of Fig. 1; Fig. 4 a view of one side of an inner rotary member which forms a part of the muffler; Fig. 5 a view of the opposite side of said member; Fig. 6 a section on the line 6—6 of Fig. 2; and, Fig. 7 a plan or face view of the rotary member shown in Figs. 4 and 5.

In the drawing forming part of this specification, I have shown at a an internal combustion engine having a cylinder a^2 and a crank shaft a^3 , and, in practice, the explosive medium is introduced into the cylinder a^2 through a pipe a^4 and the exhaust escapes from said cylinder through a pipe a^5 . It will be understood, however, that the engine a forms no part of my invention, and is only shown to illustrate one method of using my improved rotary muffler, and my said muffler

may be applied to any kind or class of an internal combustion engine.

My improved rotary power muffler is shown at b and is constructed and connected with the shaft a^3 and operated thereby as hereinafter described. The muffler b comprises a main cylindrical or circular casing having parallel side walls c and d , the side wall d being detachable and the side wall c being provided centrally with a tubular neck c^2 whereby the muffler is connected with a shaft a^3 . The shaft a^3 is provided at the opposite sides of the engine, in the form of construction shown, with tubular bearings a^6 , and the said shaft is provided at one end with a balance wheel a^7 , and the tubular bearing a^8 at the other end of said shaft fits in the tubular neck c^2 , and the muffler is secured in position by a set screw c^3 . The side wall c of the muffler is provided with exhaust ports or passages c^4 , any desired number of which may be employed, and which are preferably arranged in a circle as shown in Fig. 3.

Within the main casing of the muffler is placed a rotary member e which is clearly shown in Figs. 2, 4, 5 and 7, said rotary member, consisting of a drum-shaped casing, one side of which, the side adjacent to the side wall c of the main casing, is open and provided with an annular flange e^2 , and the drum-shaped casing e , the flange e^2 thereof, the face or rim portion of the main casing, and the detachable side wall d of said main casing form an annular chamber f in said main casing with which the exhaust pipe a^5 communicates.

The closed side of the rotary member e is provided centrally with a tubular outlet e^3 which passes through a corresponding aperture in the detachable side d of the main casing and which communicates with a radial passage g formed in connection with the detachable side d of the main casing by a raised radial member e^4 formed integrally therewith, and the radial passage g communicates at g^2 with the annular chamber f , this communication being diagonally opposite the point, where the exhaust pipe a^5 communicates with said chamber.

The rotary member e of the muffler is clearly shown in detail in Figs. 2, 4, 5 and 7, and the face e^5 thereof is provided at regular intervals with transverse blades e^6 , four of which are preferably employed, and which

divide the annular chamber f into corresponding equal parts, and said blades are formed integrally with the face of said rotary member and the flange e^2 thereof, and at the point where blades e^3 connect with the flange e^2 , the said blades are provided with fillets e^7 . The rotary member e is also provided with a plurality of radially arranged blades h , the outer ends of which are as wide, in the form of construction shown, as the transverse depth of said rotary member, and said blades are tapered inwardly and connect with a central hub member h^2 having a screw-threaded extension h^3 which, in practice, is screwed into the end of the shaft a^3 as clearly shown in Fig. 2, and it will be observed that the rotary member e in connection with the side e of the main casing forms a central circular chamber i in which the radial blades h are located, and the exhaust ports e^4 in the side e of the main casing are preferably near the outer part of this chamber.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement thereof. In practice, the rotary member e of the muffler is rapidly revolved by the shaft a^3 of the engine, and in this operation the annular chamber f is converted into a vacuum chamber, or partially so, and the exhaust from the cylinder is drawn therefrom through the pipe a^5 , into said chamber by the blades e^6 , and from said annular chamber f the said exhaust is forced by the blades e^6 into the radial passage g and through the port or passage e^3 into the chamber i in the rotary member e and in the rapid revolution of said rotary member the said exhaust is whirled out by the blades h through the exhaust ports or passages e^4 . The operation of the blades h is also to form a vacuum or a partial vacuum in the chamber i , and this facilitates the operation of drawing the exhaust from the cylinder of the engine into the annular chamber f .

In the above described operation, the burned gases or exploded gases, which are drawn into the chamber i of the rotary member e are broken up and finely distributed by the blades h and the exhaust from the ports or passages e^4 is invisible or approximately so, and the operation of my improved muffler is such as to deaden, or do away with the sound of the exhaust, and by means of the construction thereof, as shown and described, the three objects hereinbefore mentioned are accomplished, or in other words the exhaust of the exploded or burned gases from the cylinder of the engine is facilitated, the sound of the discharge is obviated, or done away with and the exhaust is discharged through the ports or passages e^4 in a practically invisible form; and in

addition thereto the exhaust from the cylinder of the engine also operates on the rotary member e so as to aid in turning the shaft a^3 with which said rotary member is connected.

My invention is not limited to any particular method of, or means for connecting the muffler with the engine, nor is the use of my improvement limited to any particular kind or class of an internal combustion engine; and various changes in and modifications of the construction herein described may be made, within the scope of the appended claims, without departing from the spirit of my invention, or sacrificing its advantages.

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

1. A rotary muffler for internal combustion engines, said muffler comprising a cylindrical casing, a rotary drum-shaped member mounted in said casing and around which is an annular chamber, said rotary member being open at one side, and the corresponding side of the main casing being provided with exhaust ports or passages and the opposite side of the main casing being provided with a radial passage which communicates with the interior of said rotary member and with said annular chamber, the interior of said rotary member being provided with radially arranged blades and the exterior thereof with transverse blades, and means for connecting the rotary member with a rotary part of the engine, and means for placing the annular chamber in communication with the exhaust of the cylinder of the engine.

2. A rotary muffler for internal combustion engines, comprising a main cylindrical casing, a rotary member mounted therein and forming in connection with the main casing an annular chamber, the rotary member being drum-shaped in form and one side thereof being open, means for forming a communication between the opposite side of the rotary member and said annular chamber, the opposite side of the main casing being provided with exhaust ports, and said rotary member being provided with internal radial blades and with external transverse blades, and means for connecting the muffler with the engine so that the said annular chamber will be in communication with the exhaust of the cylinder and the said rotary member in connection with a rotary part of the engine.

3. A rotary muffler for internal combustion engines, comprising a main cylindrical casing, a rotary member mounted therein and forming in connection therewith an annular chamber, said rotary member being drum-shaped in form and one side thereof being open and the adjacent side of the

main casing being provided with exhaust
ports, means for forming a communication
between the opposite side of the rotary mem-
ber and said annular chamber, said rotary
5 member being provided with internal radial
blades and with external transverse blades
which operate in said annular chamber, and
means for connecting the muffler with the
engine so that said annular chamber will be
10 in connection with the exhaust of the en-

gine, and said rotary member with a rotary
part of the engine.

In testimony that I claim the foregoing
as my invention I have signed my name in
presence of the subscribing witnesses this 15
2nd day of September 1910.

GEORGE LEWIS.

Witnesses:

C. E. MULREANY,
B. M. RYERSON.