D. F. LEARY.

FAN MUFFLER.

APPLICATION FILED FEB. 19, 1909. RENEWED NOV. 29, 1909.

945,101. Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.

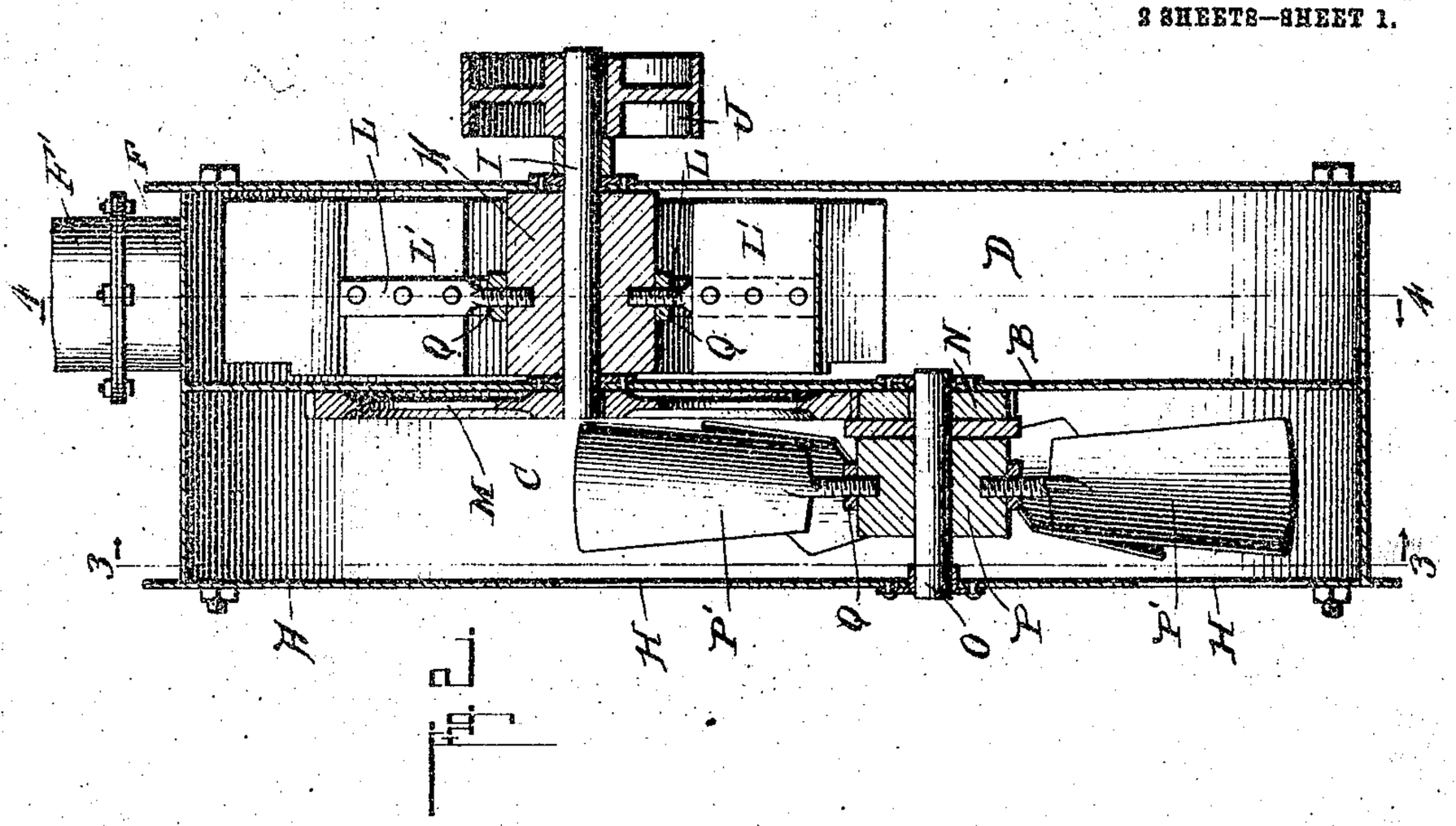
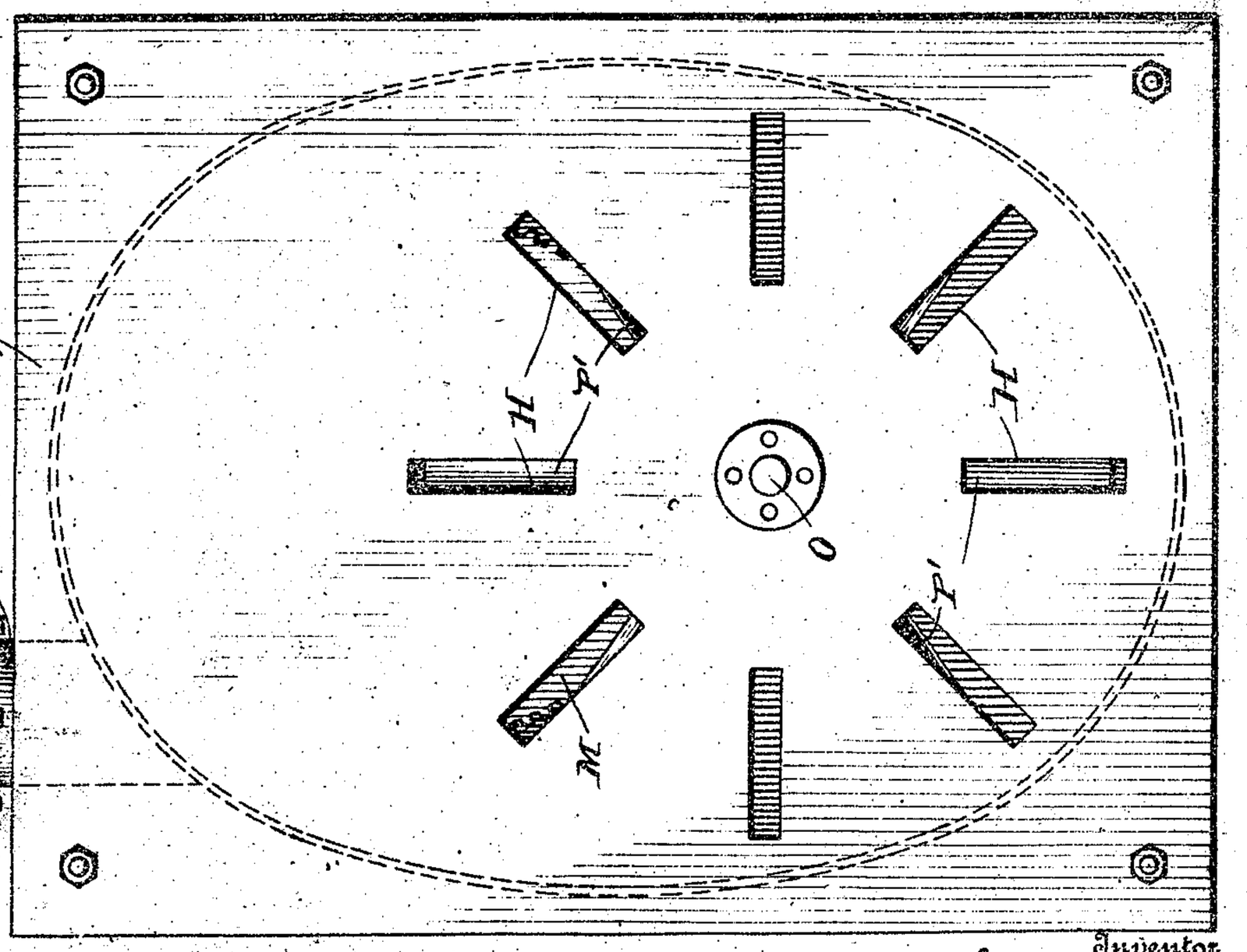


Fig. 2.



Witnesses

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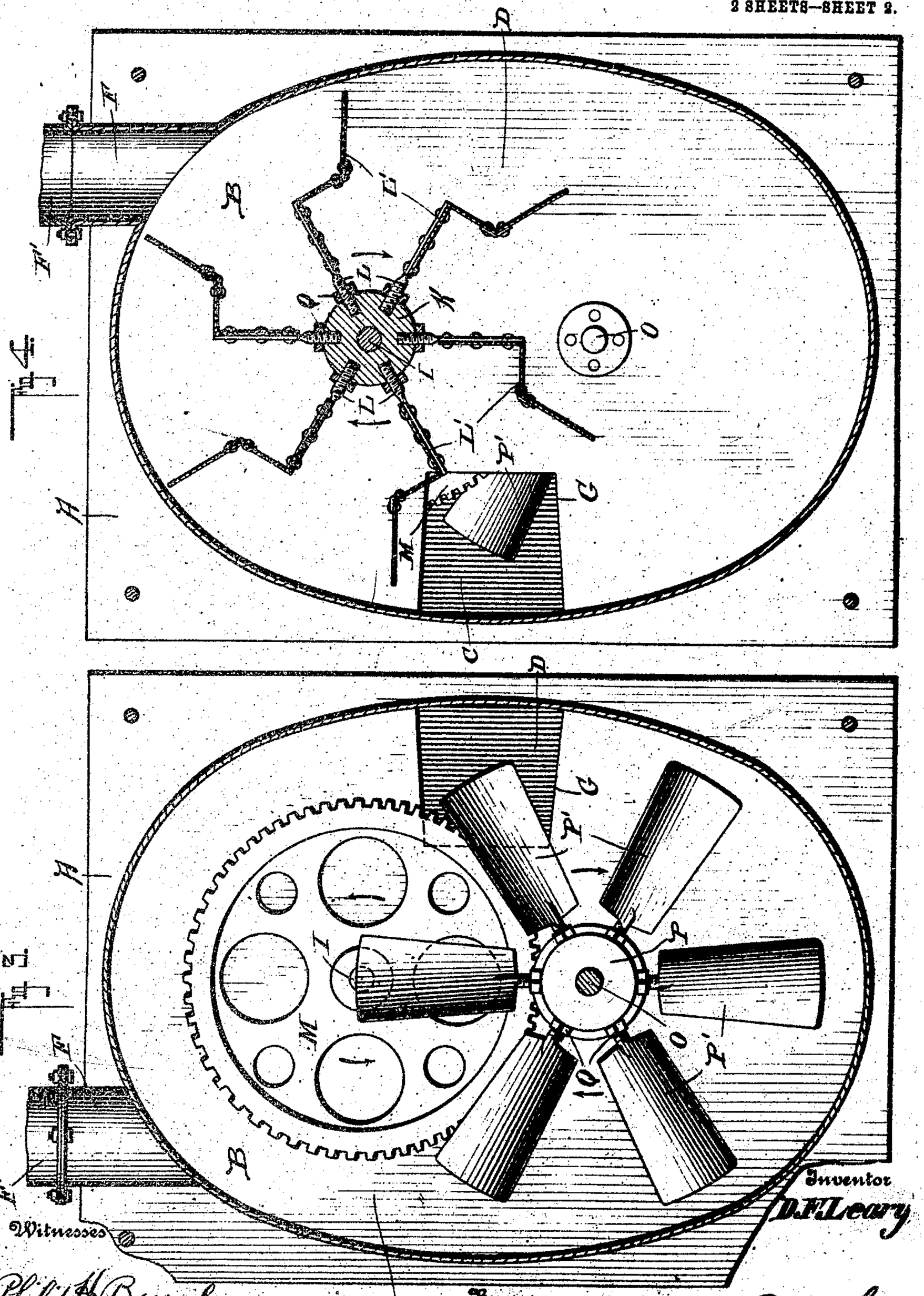

# UNITED STATES PATENT OFFICE.

DENNIS FRANCIS LEARY, OF CHELSEA, MASSACHUSETTS.

## FAN-MUFFLER.

945,101. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed February 19, 1909, Serial No. 478,948. Renewed November 29, 1909. Serial No. 530,497.

*To all whom it may concern:*

Be it known that I, DENNIS F. LEARY, a citizen of the United States, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Fan-Mufflers, of which the following is a specification.

This invention relates to certain new and useful improvements in mufflers for engines and more particularly to mufflers especially adapted to be used in connection with explosive engines, the object being to provide a muffler which is so constructed that the force of the exhaust products will be broken up and delivered in a quieted condition.

Another object of my invention is to provide a muffler which can be driven direct by the force of the exhaust by the engine through the medium of a belt.

A still further object of my invention is to provide a muffler which comprises a casing having a central partition forming two compartments each of said compartments being provided with a fan, one of the fans being driven by the force of exhaust and the other fan by the first mentioned fan through the medium of gears whereby the exhaust products will be drawn out of the first mentioned to the second compartment and broken up and then forced out through radial arranged openings formed in the casing.

With these objects in view my invention consists of the novel features of construction, combination and arrangement of parts hereinafter described, pointed out in the claims and shown in the accompanying drawings, in which,

Figure 1 is a front elevation of my improved muffler. Fig. 2 is a vertical section of the same. Fig. 3 is a section taken on the line 3—3 of Fig. 2. Fig. 4 is a section taken on the line 4—4 of Fig. 2.

In carrying out my improved invention I employ a casing A having a central partition B forming compartments C and D. The compartment D is provided with an inlet port F to which a pipe F′ is adapted to be connected leading from the engine and through which the exhaust is adapted to pass so that the force of the exhaust will be directed downwardly into the compartment for the purpose which will be hereinafter fully described. The central partition B is provided with an opening G through which the exhaust products pass from one compartment to the other and the face of the casing is provided with a plurality of radially arranged slots H which allow the exhaust from the compartment C to escape.

The partition B and the back of the casing are provided with bearings in which is mounted a shaft I which extends out to the rear of the casing and on which is fixed a pulley J so that the shaft can be driven directly from the engine if desired, by a belt or any other suitable means. Mounted in the shaft I within the compartment D is a hub K provided with a plurality of threaded sockets in which are secured a plurality of threaded stems L carrying angle blades L′ which are so arranged in respect to the part that the full force of the exhaust entering the port will strike the same in such a manner that they will cause the same to rotate. The fan formed by the blades and hub is for driving the shaft which has secured on its other end a gear wheel M within the compartment C and it will be seen that the exhaust products will be broken up to a certain extent by this fan.

The gear wheel M meshes with a gear wheel N fixed on a shaft O mounted in bearings formed in the face of the casing and the partition B below the shaft I and on which is secured a hub P having a plurality of threaded sockets formed therein in which are arranged blades P′ forming a fan, said blades being set at such an angle that when revolved they will draw the exhaust products out of the compartment D into the compartment C where they will be broken up and forced out of the slots formed in the face of the casing in a quieted condition.

The blades of both of the fans are locked in the hubs of the threaded sockets by set nuts Q whereby they can be readily adjusted at different angles and it will be seen that as the exhaust products strike the blades L′ the shaft I will be rotated which in turn will rotate the shaft O through the medium of the gears M and N and as the two fans are rotated the exhaust products is first partially broken up by the first fan and from the compartment D is drawn into the compartment C where it is completely broken up and forced out through the radial arranged openings.

It will be seen that I have provided means for driving the fan by power direct from the engine if desired but I have found that the exhaust will drive the same so as to cause the fan to rotate at a sufficient rate of

speed to break the exhaust products up in such a manner that when delivered they will be in a quieted condition.

From the foregoing description it will be seen that I have provided a muffler provided with compartments in one of which is mounted a driving shaft carrying a breaking up fan, the breaking up fan being especially adapted to be driven by the force of the exhaust products and from this compartment the exhaust products are delivered into the second compartment in which is mounted a breaking up fan whereby the products will be broken up before they are delivered from the muffler.

What I claim is:—

1. A fan muffler provided with a driving fan and a breaking up fan, said breaking up fan being driven by the driving fan.

2. A fan muffler comprising a casing, provided with a driving fan and a breaking up fan.

3. A muffler comprising a casing provided with compartments, a driving fan mounted in one of the compartments, a breaking up fan mounted within the other compartment, said breaking up fan being driven by the driving fan.

4. A muffler of the kind described comprising a casing, having a central partition forming two compartments, fans mounted in said compartments in different horizontal planes and means carried by the shaft of one of said fans for driving the other fan.

5. A muffler comprising a casing provided with compartments, shafts mounted in said compartments carrying fans and gears carried by said shafts meshing with each other together with an inlet port leading to one of said compartments whereby the fan of that compartment will be driven by the force of exhaust.

6. A muffler of the kind described comprising a casing, provided with a central partition formed in two compartments, a fan mounted in one compartment adapted to operate by the force of exhaust, a fan mounted in the other compartment operated by the first mentioned fan for drawing the exhaust products out of the first mentioned compartment and out through the second named compartment.

7. In a muffler of the kind described the combination with a casing provided with compartments, one of said compartments being provided with an inlet port, of a driving fan mounted in said compartment, a breaking up fan mounted in the other compartment, said breaking up fan being driven by the driving fan.

8. In a muffler of the kind described the combination with a casing provided with compartments communicated together, radially arranged slots formed in the face of one compartment, an inlet port leading into the other compartment, a driving fan arranged within the compartment provided with the inlet port and a breaking up fan arranged within the other compartment.

9. A muffler of the kind described comprising a casing provided with compartments, said compartments having fans mounted therein in different horizontal planes, an inlet port communicating with one of said compartment and radially arranged slots formed in the face of the other compartment whereby the exhaust products from the engine will be drawn through said compartment and forced out of said radially arranged slots in a quieted condition by the action of said fans.

10. A muffler of the kind described comprising a casing provided with a central partition forming compartments, said partition being provided with an opening, an inlet port formed in one of the compartments, outlet slots formed in the face of the other compartment, a fan mounted in the compartment provided with the inlet port adapted to be driven by the exhaust from the engine and a fan mounted in the other compartment operated by the first mentioned fan.

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