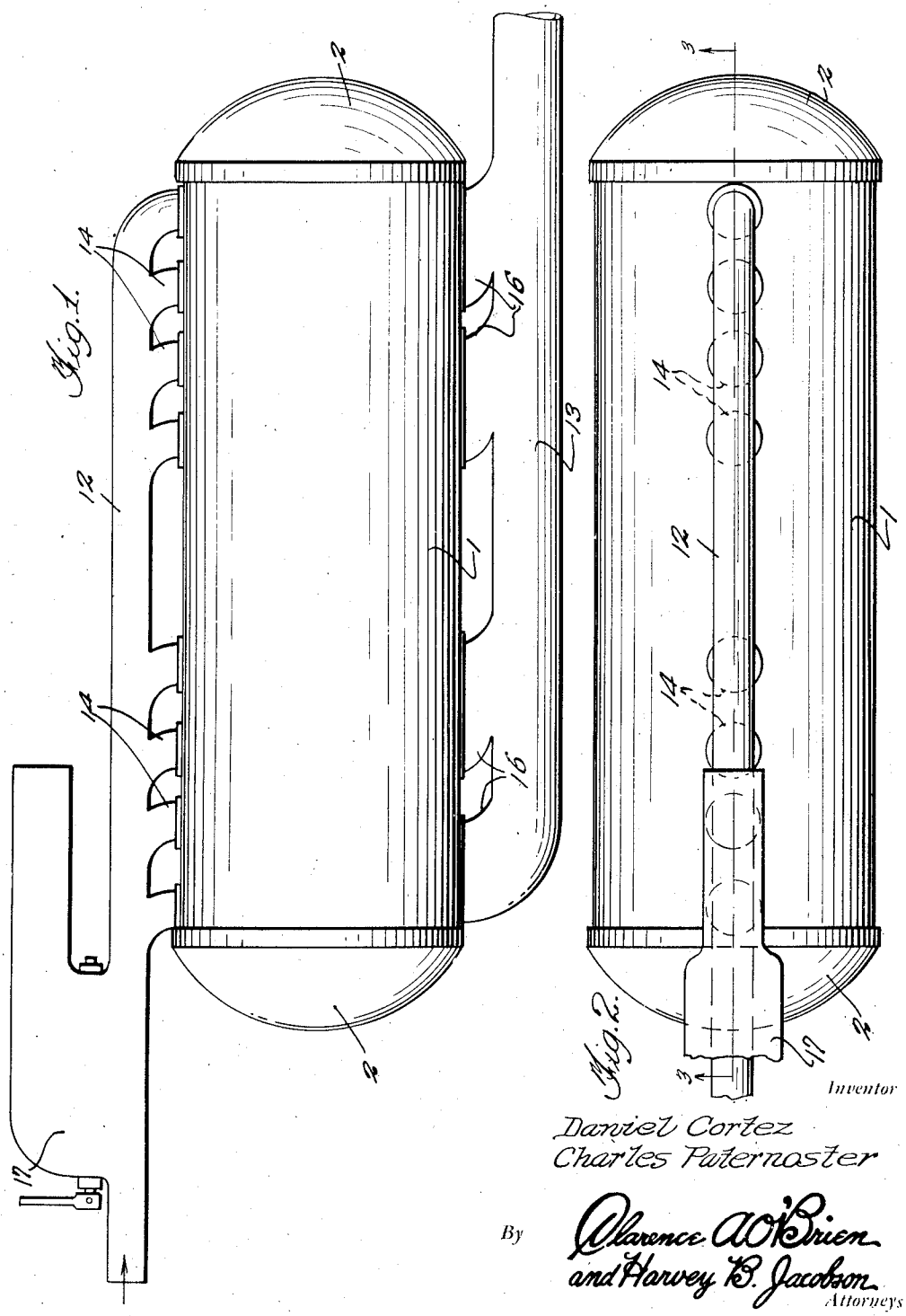
July 18, 1944. D. CORTEZ ET AL 2,353,998

MUFFLER

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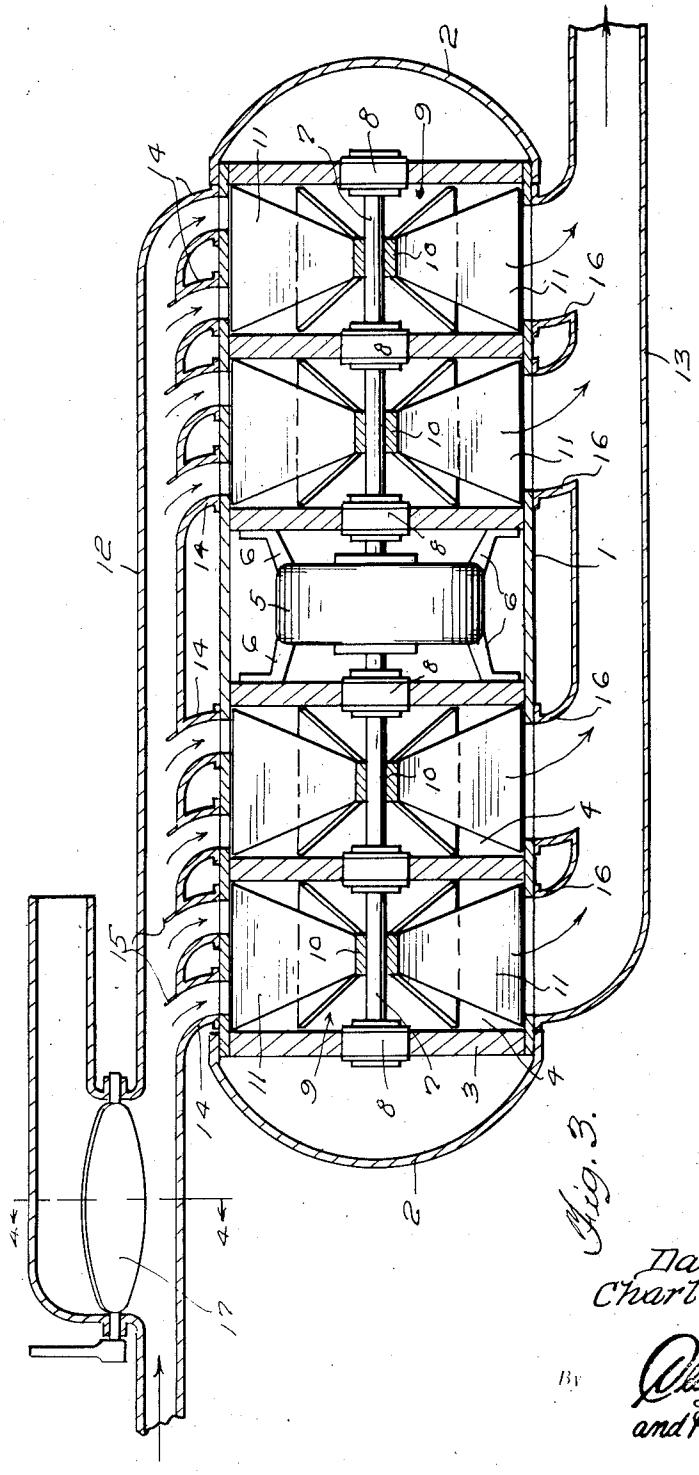


Fig. 3.

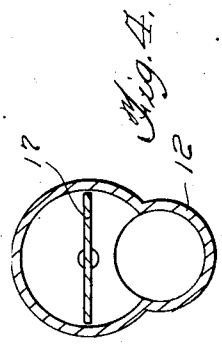


Fig. 4.

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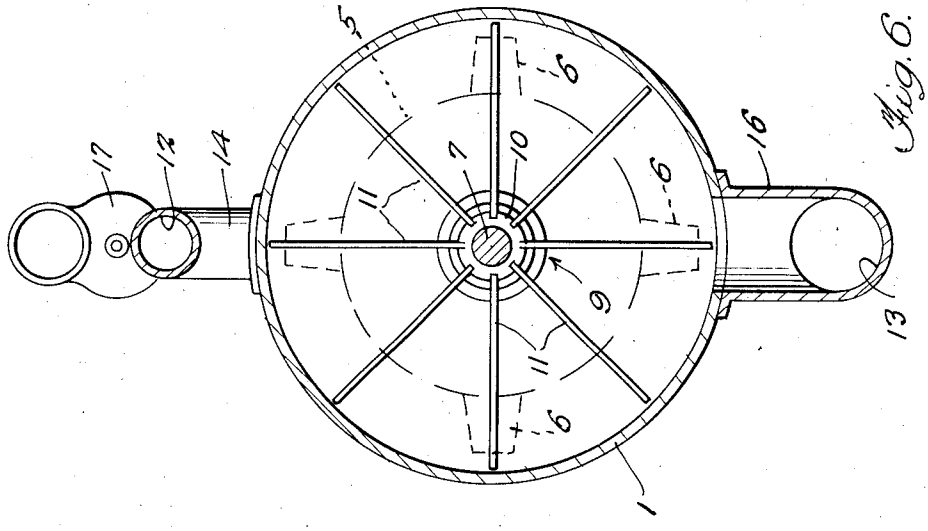


Fig. 6.

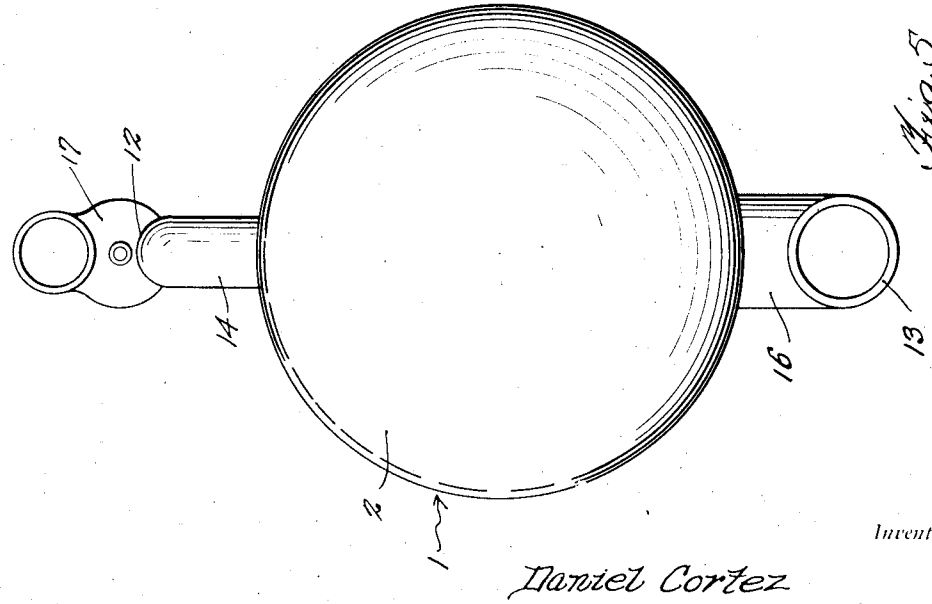


Fig. 5.

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UNITED STATES PATENT OFFICE

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MUFFLER

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Application November 7, 1942, Serial No. 464,870

3 Claims. (Cl. 181—64)

The present invention relates to new and useful improvements in mufflers for internal combustion engines, particularly those used in power aircraft.

The primary object of the invention is to provide, in a manner as hereinafter set forth, a muffler comprising a novel construction and arrangement for silencing the exhaust of the engine without creating excessive back pressure thereon.

Other objects of the invention are to provide an internal combustion engine muffler, or silencer, which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in side elevation of a muffler constructed in accordance with the present invention.

Figure 2 is a plan view thereof.

Figure 3 is a view in vertical longitudinal section through the device, taken substantially on the line 3—3 of Figure 2.

Figure 4 is a cross sectional view, taken substantially on the line 4—4 of Figure 3.

Figure 5 is a view in rear elevation of the device.

Figure 6 is a cross sectional view through the muffler.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises an elongated, horizontal cylindrical casing 1 of suitable dimensions and material. The casing 1 includes substantially concavo convex end closures or caps 2.

Partitions 3 are mounted in the casing 1 at longitudinally spaced points. The partitions 3 define a series of circular compartments or chambers 4 in the casing 1.

Mounted in the center compartment 4 is a suitable electric motor 5. Supporting arms or brackets 6 are provided for the electric motor 5. The partitions 3 between which the motor 5 is mounted are insulated to protect said motor from excessive heat.

Longitudinal shafts 7 are journaled in sealed bearings 8 which are provided therefor in the partitions 3 and operatively connected to the electric motor 5. The shafts 7 extend centrally through the circular chambers 4.

Rotors 9 are mounted on the shafts 7 for operation in the chambers 4. The rotors 9 include hubs 10 which are removably secured on the shafts 7. Substantially fan-shaped blades 11 radiate from the hubs 10.

Communicating with the chambers 4 on diametrically opposite sides thereof are intake and exhaust manifolds 12 and 13, respectively. The intake manifold 12 communicates with each of the chambers 4 through a pair of branches 14 for distributing the gases uniformly in said chambers on the rotors 9. Baffles 15 direct the exhaust gases into the branches 14. The exhaust manifold 13 communicates with each of the chambers 9 through a single, comparatively large branch 16. At a point forwardly of the casing 1, the manifold 12 is provided with a cut-out 17. The various parts may be secured together by any suitable well known means, such as welding, bolting, riveting or the like.

It is thought that the operation of the device will be readily apparent from a consideration of the foregoing. Briefly, the electric motor 5 is energized from any suitable source of current for actuating the rotors 9 in the chambers 4. The exhaust gases from the engine, entering the chambers 4, strike the blades 11 of the rapidly turning rotors 9 and are thoroughly broken up thereby. The broken up exhaust gases are retarded sufficiently by the rotors 9 to cause them to flow from the chambers 4 in steady, uniform streams into the exhaust manifold 13 from which they are discharged to the atmosphere. The electric motor 5 may be controlled in any suitable manner.

It is believed that the many advantages of an internal combustion engine muffler or silencer constructed in accordance with the present invention will be readily understood, and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. A muffler comprising a cylinder, transverse partitions dividing the cylinder into a series of chambers, intake and exhaust manifolds communicating with all but one of the chambers, an electric motor operable in said one of the chambers, and rotors operable in the remaining cham-

bers and operatively connected to said motor for actuation thereby.

2. A muffler of the character described comprising a cylindrical casing, transverse partitions dividing the cylindrical casing into a series of circular chambers, diametrically opposite intake and exhaust manifolds communicating with all but an intermediate one of the chambers, an electric motor mounted in said intermediate chamber, shafts journaled longitudinally in the chambers and operatively connected to said motor, and fan rotors fixed on said shafts and operable in the chambers.

3. An engine muffler of the character described comprising an elongated cylindrical casing, caps closing the ends of said casing, partitions mounted in the casing at longitudinally spaced points, said partitions providing a series of circular chambers in the casing, sealed bearings mounted in the partitions, an electric motor mounted in an intermediate chamber, shafts journaled in the bearings and operatively connected to the motor, fan rotors mounted on the shafts for operation in the remaining chambers, said rotors including hubs fixed on the shafts and substantially fan-shaped blades radiating from said hubs, an intake manifold including a plurality of branches communicating with each of said remaining chambers, and an exhaust manifold communicating with said remaining chambers at diametrically opposite points from the branches of the intake manifold.

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