

June 11, 1946.

P. E. ROSALES

2,402,087

EXHAUST SILENCER

Filed Oct. 28, 1943

2 Sheets-Sheet 1

Fig. 1.

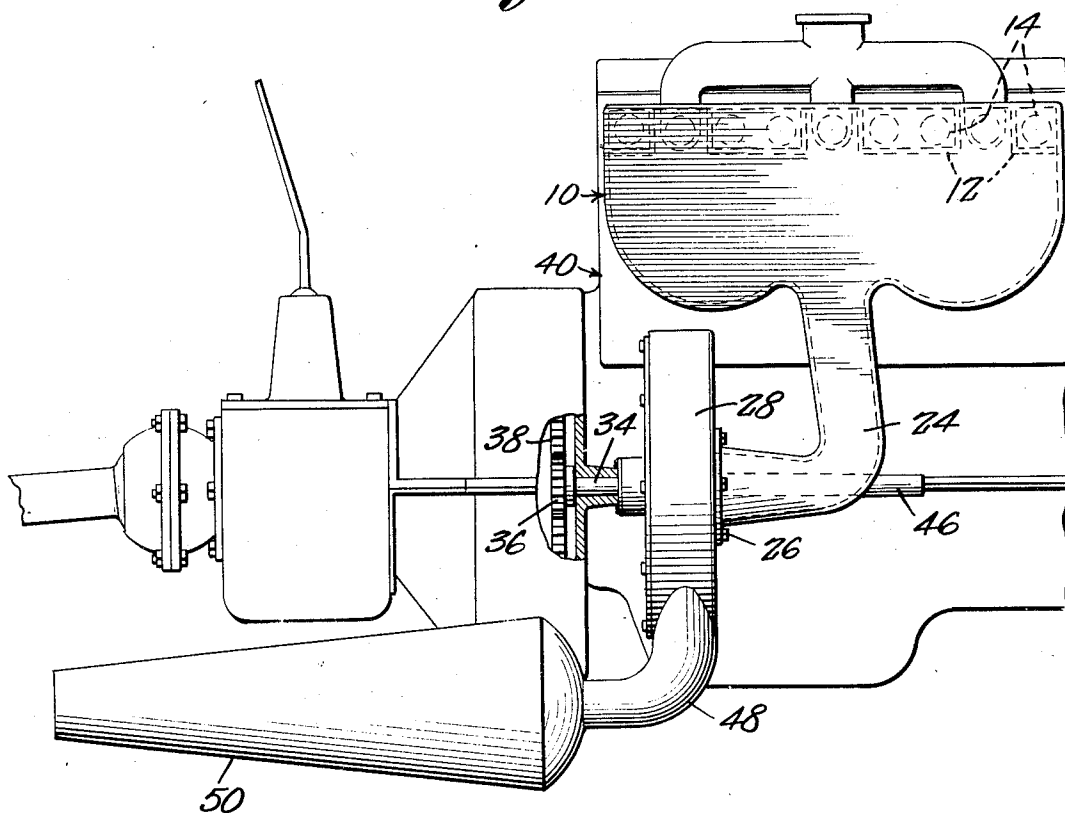
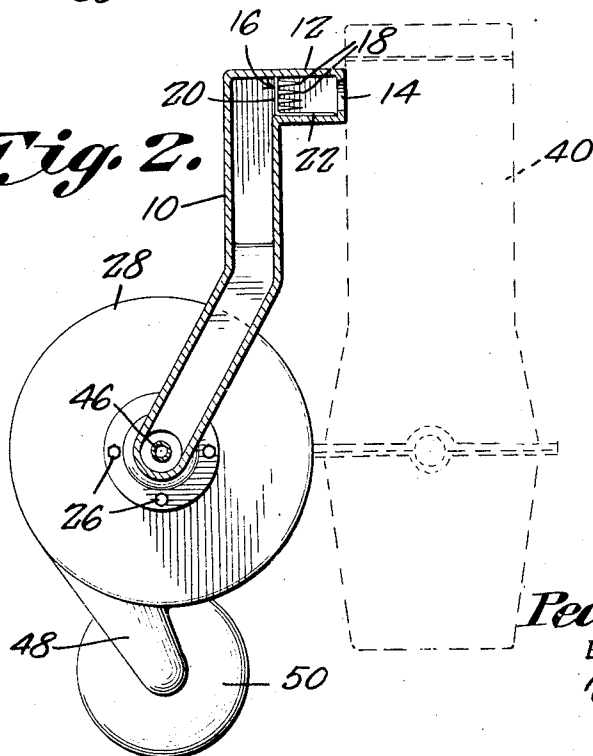


Fig. 2.



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Fig. 3.

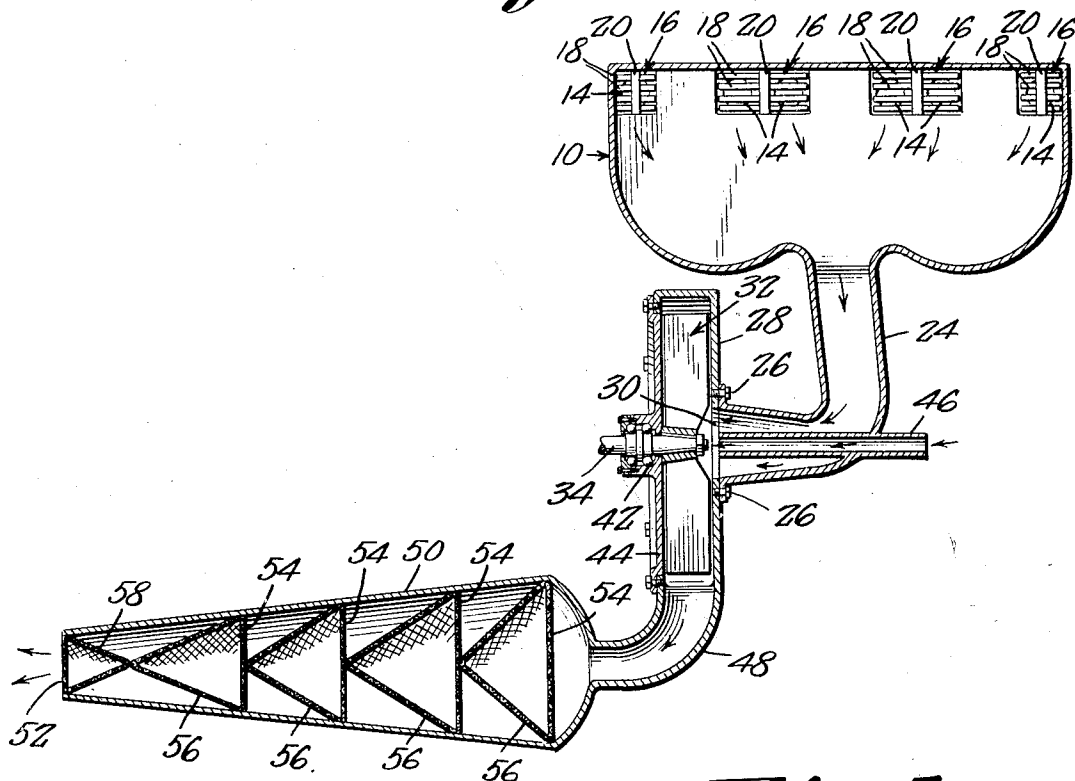


Fig. 4.

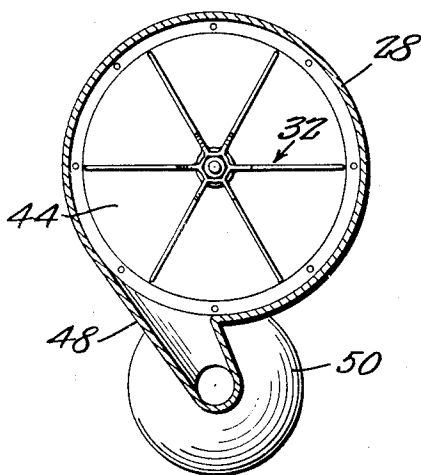
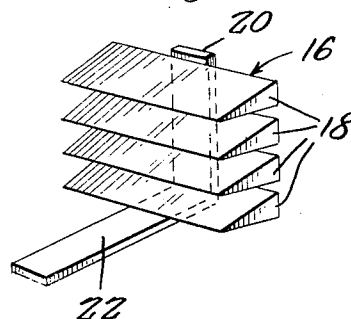


Fig. 5.



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EXHAUST SILENCER

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Application October 28, 1943, Serial No. 507,982

4 Claims. (Cl. 181-64)

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My invention relates to internal combustion engines, and has among its objects and advantages the provision of an improved exhaust silencer.

In the accompanying drawings:

Figure 1 is a fragmentary view of a conventional automotive vehicle engine illustrating my invention applied thereto.

Figure 2 is an end view of the engine with the silencer partly in section.

Figure 3 is a sectional view of the silencer.

Figure 4 is a sectional view through a fan housing, and

Figure 5 is a perspective view of an exhaust port grate.

In the embodiment of the invention selected for illustration, I make use of a relatively large housing 10 which is provided with lateral projections or chambers 12 attached to the engine. The chambers are provided with exhaust receiving openings 14, the end chambers 12 each including one such opening and the two intermediate chambers each including two such openings. One opening 14 is provided for each cylinder of the engine.

Each chamber 12 is provided with a grate 16 made up of at least four wedge elements 18. These elements have their bases attached to a bar 20 comprising a right angular extension on a bar 22 fixed to one wall of its respective chamber 12. The elements 18 are of the same length and extend the full width of their respective chambers 12, but the elements are equally spaced one from the other and with the upper and lower elements spaced similar distances from the top and bottom walls of the chamber.

The housing 10 includes a conduit 24 for exhaust gases, which conduit is in the nature of an elbow having one end bolted at 26 to a fan housing 28 having an inlet opening 30. A fan 32 is mounted in the housing 28 coaxially of the opening 30 and attached to a drive shaft 34.

Figure 1 illustrates the shaft 34 as being provided with a pinion 36 meshing with the starter gear 38 of the engine 40. I prefer to drive the fan 32 at a speed five times greater than the crank shaft speed of the engine. A roller bearing 42 may be supported on the cover 44 of the fan housing to afford good support for the shaft 34.

A fresh air inlet tube 46 is arranged coaxially of the opening 30 and projects through the bend in the elbow 24 for communication with the atmosphere.

A neck 48 has communication with the fan housing 28 and with one end of a tubular housing 50. This housing tapers uniformly from its end connected with the neck 48 throughout its entire length. The small end of the housing 50 is provided with a screen disk 52, and screen 60

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disks 54 of progressively larger diameters are spaced longitudinally of the housing 50. Conical screens 56 have their base ends respectively connected with the screen disks 54 and with their apexes engaging forwardly positioned disks 54 with the exception of the foremost screen 56, the latter having its apex attached to the apex of a reversely positioned cone screen 58 having its base attached to the screen 52.

The exhaust gases passing through the openings 14 are divided into a plurality of streams by the wedge elements 18. The divided gas streams pass into the housing 10, the latter being of relatively large capacity. The gases in the chamber 10 are drawn into the fan housing 28 and are driven therefrom through the neck 48 and into the housing 50. At the same time, pure air is drawn into the fan housing 28 through the medium of the tube 46. The fan is of greater transmission capacity than the exhausting capacity of the motor. The tube 46 functions as an auxiliary air supplying medium for the fan. Because of the manner in which the exhaust gases are evacuated from the chamber 10, all exhaust noises are eliminated.

Without further elaboration, the foregoing will so fully explain my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. A silencer for an internal combustion engine, comprising an exhaust receiving housing provided with lateral chambers connected to the engine, a tubular housing, perforated means inside said tubular housing, a conduit between said first mentioned housing and said tubular housing, and a fan housing interposed in said conduit, a fan mounted in said housing for evacuating exhaust gases from the first mentioned housing and blowing the gases through said tubular housing.

2. The invention described in claim 1 wherein means are provided for admitting atmospheric air to said fan.

3. The invention described in claim 1 wherein each of said exhaust receiving chambers of said first mentioned housing is provided with a plurality of spaced wedge-shaped elements having their apexes heading into the exhaust gases from the engine.

4. The invention described in claim 1 wherein said perforated means comprise conically shaped screens inside said tubular housing and provided with screen bases extending transversely of the tubular housing, all the conically shaped screens extending in the same direction, with the exception of one, in the direction of flow of the exhaust gases, with said one arranged in a reverse direction.

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