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(54) Silencer group for muffler of internal combustion engines

(57) The group is formed by a pipe (1) obstructed in the middle by a separator (2) to form two equal expansion openings (3 and 4) with diffusion holes (5). Through said holes (5) the coming in flow of the exhaust-gases passes from the first expansion opening (3) to an outside chamber (6) of a coaxial cylindrical body with closed ends and provided in its outside of a

coating (8) in steel wool and long fiber rock wool. From said outside chamber (6) of the cylindrical body (7) the flow of the exhaust-gases, through the other diffusion holes (5), comes in getting out into the second diffusion opening (4).

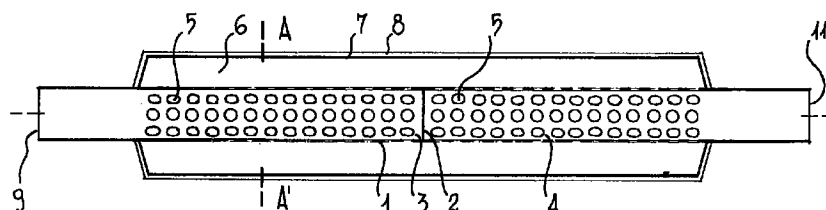


FIG. 1

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Description

The invention refers to a silencer group for dropping of sounds for muffler of internal combustion engines. Said group enormously comes to raise the yield by a considerable increase of the diffusion effect of the exhaust-gas on the absorption walls. Said increase permits using two subsequent expansion openings between which a compression of the same gases is permitted. For the dropping of the sounds the current mufflers act on the base of two systems: a reflection system consists of a set of inside bulkheads with separators to determine a circuit and/or sound absorption parts to drop sounds; and an absorption system in which the exhaust-gases pass through a dropping chamber to be equipped with sound absorption barriers. Of two said systems, the reflection system is affected to counter-pressure effects caused by the flow narrowing provided to the exhaust, while the absorption system permits a small dropping of the sounds such as the contact of the flow of the exhaust-gases with the sound absorption barriers is highly reduced during the use for the clogging of the circuit holes. The above cited problems are resolved by the invented silencer group which permits to realize mufflers using one or more of said silencer groups for dropping the sounds to be assembled in working succession so permitting to put in connection their yield with the different using necessities. The invented group is formed by a pipe 1 obstructed in the middle to a separator 2 to form two equal expansion openings 3 and 4 with diffusion holes 5. Through said holes 5 the coming in flow of the exhaust-gases passes from the first expansion opening 3 to an outside chamber 6 of a coaxial cylindrical body with closed ends and provided in its outside of a coating 8 in steel wool and long fiber rock wool. From said chamber 6 of the cylindrical body 7 the flow of the exhaust-gases through the other diffusion holes 5 comes in getting out into the second diffusion opening 4. In the embodiment with an only one silencer group for dropping the sounds, the flow of the exhaust-gases through an inlet 9 comes into the first expansion opening 3. Then, through the diffusion holes 5, said flow comes into a chamber 6 where a high dropping is determined due to the coating 8 of the cylindrical body 7 and to the wrapped up sound absorption wadding 10. At the end, the flow through the other diffusion holes 5 comes into the second expansion opening 4 and goes out through the outlet 11. In the embodiment with a muffler with two silencer groups for dropping the sounds, the flow of the exhaust-gases through an inlet 12 comes into a distribution chamber 13. In said chamber a flow division is determined with passage through two mouths 9 letting into the circuits of the silencer groups. At the end the flows come through the inlets 11 of the same groups into the mixing chamber 14 to go out through a channel 15. The silencer group and different embodiments are illustrated in the drawings of sheets 1 and 2. In sheet 1 fig. 1 is longitudinal section view of a

silencer group for dropping sounds for muffler of internal combustion engines. Fig. 2 is longitudinal section view of a muffler providing only one silencer group. Fig. 3 is a sectional view taken along the line A-A' of the silencer group. Fig. 4 is a sectional view taken along the line A-A' of the muffler to show its circular shape. Fig. 5 is a sectional view taken along the line A-A' of a muffler using a group for the dropping of the sounds but with elliptic shape. In sheet 2 fig. 6 is longitudinal section view of a muffler using a couple of the invented groups to show the different circuits for dropping the sounds between the distribution chamber 13 and the mixing chamber 14. Fig. 7 is a sectional view taken along the line B-B' to show a muffler with a couple of silencer groups with elliptic shape. Fig. 8 is a sectional view taken along the line B-B' of a muffler with a couple of silencer groups with circular shape.

Claims

1. Silencer group for muffler of internal combustion engines consists of a pipe (1) obstructed in the middle to a separator (2) to form two equal expansion openings (3 and 4) with diffusion holes (5), characterized in that through said holes (5) the coming in flow of the exhaust-gases passes from the first expansion opening (3) to an outside chamber (6) of a coaxial cylindrical body with closed ends and provided in its outside of a coating (8) in steel wool and long fiber rock wool, and in that from said outside chamber (6) of the cylindrical body (7) the flow of the exhaust-gases through the other diffusion holes (5) comes in getting out into the second diffusion opening (4).
2. Silencer group for muffler of internal combustion engines, as per claim 1), characterized in that providing a muffler with an only one silencer group for dropping the sounds, the flow of the exhaust-gases through an inlet (9) comes into the first expansion opening (3) and, through the diffusion holes (5), it comes into a chamber (6) where a high dropping is determined due to the coating (8) of the cylindrical body (7) and to the wrapped up sound absorption wadding (10); then the flow through the other diffusion holes (5) comes into the second expansion opening (4) and goes out through the outlet (11).
3. Silencer group for muffler of internal combustion engines, as per claim 1), characterized in that providing a muffler with two silencer groups for dropping the sounds, the flow of the exhaust-gases through an inlet (12) comes into a distribution chamber (13) where the flow division is determined with passage through two mouths (9) letting into the circuits of the silencer groups; then the flows come through the inlets (11) of the same groups into the mixing chamber (14) to go out through a channel

(15).

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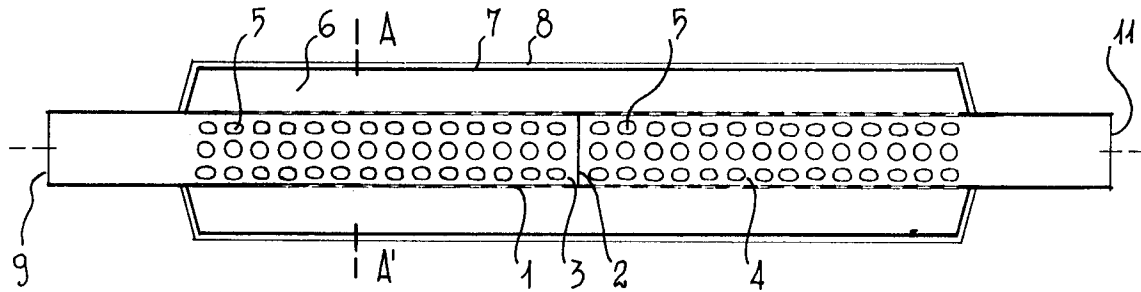


FIG. 1

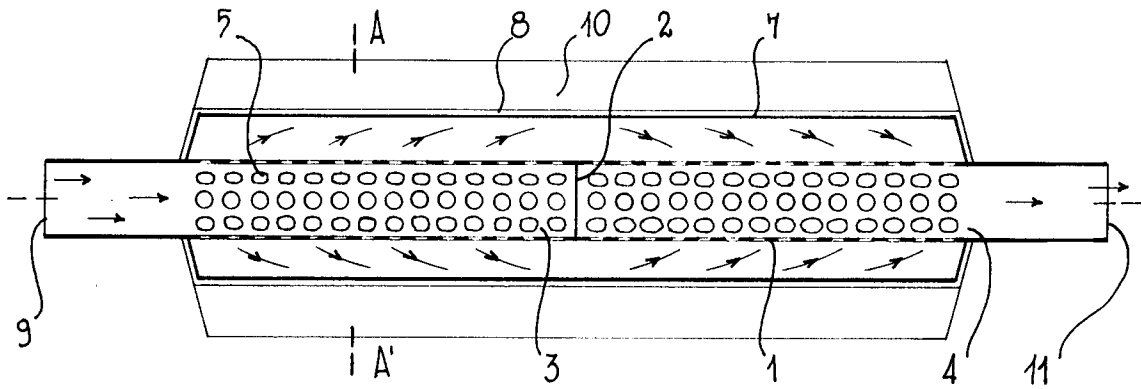


FIG. 2

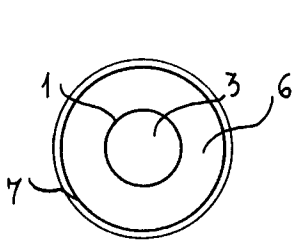


FIG. 3

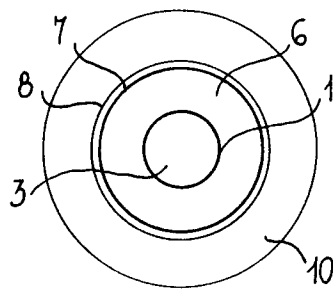


FIG. 4

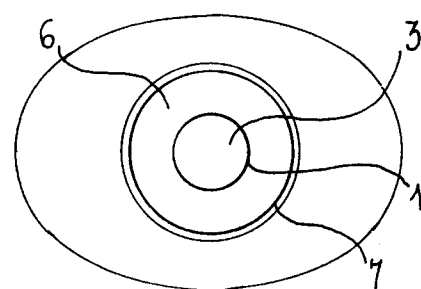
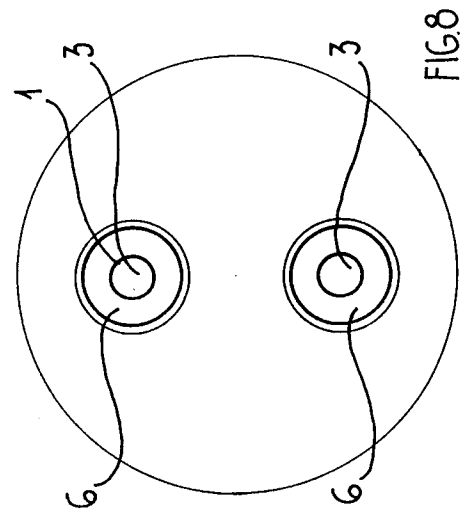
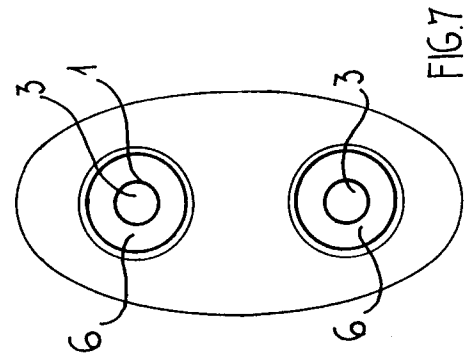
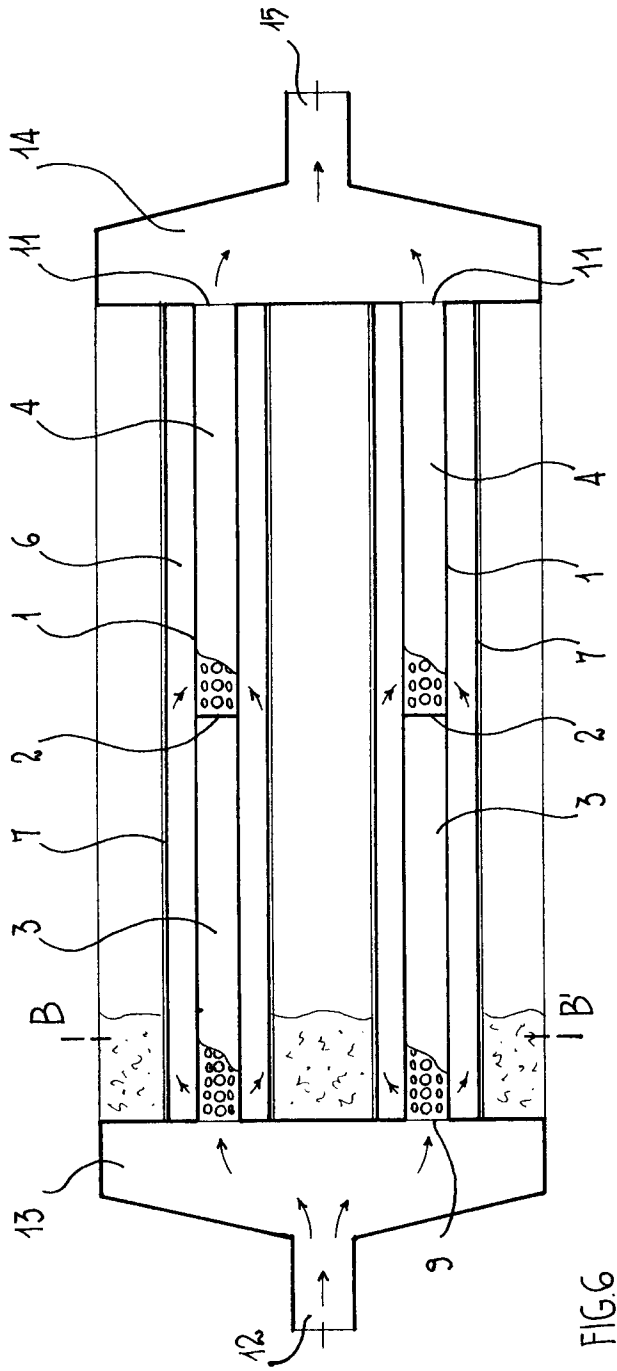


FIG. 5





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EUROPEAN SEARCH REPORT

Application Number
EP 97 83 0232

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	US 4 550 799 A (FLUGGER RAY T) 5 November 1985 * column 2, line 54 - column 3, line 47; figures 1,2 *	1	F01N1/10
Y	US 4 269 800 A (SOMMER ROLF ET AL) 26 May 1981 * the whole document *	1	
A	DE 32 05 185 A (SEITZ WILFRIED) 25 August 1983 * page 15, last paragraph *	2	
A	FR 2 037 718 A (LIONEL FOTHERGILL DEVELOPMENTS LIMITED) 31 December 1970 * page 3, line 15 - page 4, line 15; figure 1 *	3	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F01N
Place of search	Date of completion of the search	Examiner	
THE HAGUE	10 October 1997	Torle, E	
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