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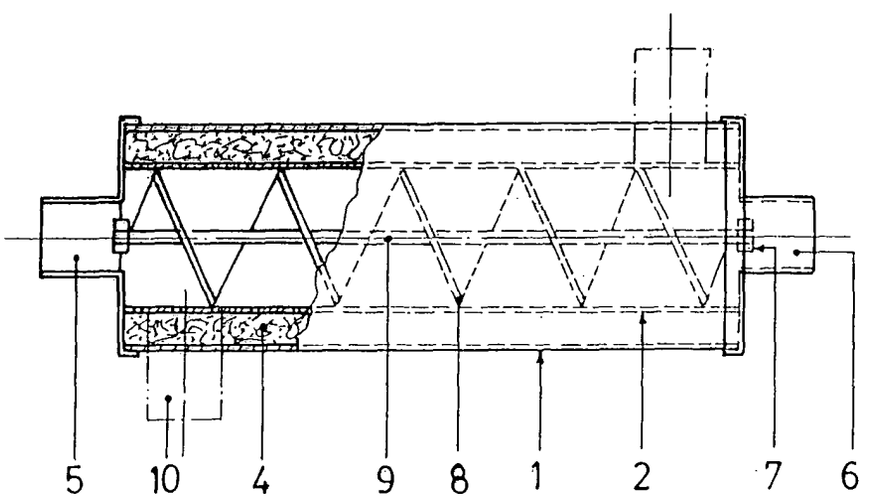
(54) Improved acoustic silencer

(57) IMPROVED ACOUSTIC SILENCER, which absorbs and reduces the sound produced by the exhausting of gases from any type of machinery or equipment to the maximum possible. It is made up by an outer casing (1) and an inner concentric casing (2), and has a layer of sound absorbing material (4) placed between them, the purpose of which is to absorb and reduce the noise produced by the gases from the entry into the silencer and to the exit, the internal casing (2) having perforations along the length of its wall, and a endless screw (8) on the inside that guides the gases through the inside of the silencer.

FIG. 1



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Description

OBJECT OF THE INVENTION

[0001] The object of this invention is an improved acoustic silencer that incorporates significant innovations and advantages when compared to the present silencers used for the same purpose.

[0002] More specifically, the present invention is made up by foraminated outer and inner concentric casings, and has a layer of sound absorbing material placed between them, the purpose of which is to absorb and reduce the noise produced by the gases from their entry into the silencer and to the exit, an internal helical structure guiding the gases along the silencer.

BACKGROUND TO THE INVENTION

[0003] On the market at the present time there are a multitude of appliances, equipment or machinery, such as vacuum pumps, electrical or thermal motors, ventilation ducting, exhaust pipes, etc. that generate an amount of noise that are elements producing a strong element of noise pollution.

[0004] With the development of the silencer of the present invention the maximum reduction of said noise has been achieved as the gases generated during the process pass through the silencer from the entry to the exit, since acoustic silencers that absorb and reduce said noises are unknown.

DESCRIPTION OF THE INVENTION

[0005] The improved acoustic silencer of the present invention reduces the sound produced by the exhaust of gases in any type of machine such as vacuum pumps, electrical or thermal motors, ventilation ducting, exhaust pipes, etc. it being possible to locate it either at the entry or equally at the exit of said appliances to which it is to be fitted.

[0006] In order to do this the silencer is made up of a cylindrical external casing and another casing on the inside of it, arranged concentrically and duly spaced. Between the two casings there is a layer of sound absorbing material, the purpose of which is to absorb and reduce the noise produced by the gases from their entry right up into the silencer to their exit with an opening for the entry and another for the exhausting of the gases, by preference these openings will be arranged at the ends of the silencer.

[0007] The material used for the said sound absorbing layer can be absorbent fibre, foam, or a similar material capable of carrying out this function.

[0008] The inner casing has some perforations along the length of its wall by means of which the sound absorbing layer is brought into direct contact with the gas, absorbing and reducing the noise pollution that said movement produces.

[0009] In the space formed on the inside of the inner casing a core is assembled onto some support and fastening elements, these are arranged both at the entrance and the exit of the gases. Onto this core a endless screw is attached, which, thanks to its helicoidal arrangement allows the gases to pass and be guided, making them be influenced by the sound absorbing layer and thus reducing the noise pollution to a maximum.

[0010] Each spiral or turn of the endless screw in turn makes an air breech, thus increasing the contact of the gas with the sound absorbing layer and reducing the noise and the pollution. Because of this, it is of interest for the screw to have the greatest number of turns possible.

[0011] Alternatively, the openings for the entry and exit of the gases in the silencer can be located at a point on the perimeter of the side wall of same.

[0012] In order to complete the description that is going to be made below and for the purpose of helping to give a greater understanding of its characteristics, the present description is accompanied by a set of drawings, which are by way of illustration and not by way of limitation, where the most significant details of the invention are represented.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

Figure 1 shows a partially sectioned side view of the silencer of the present invention.
Figure 2 shows a frontal view of the silencer.
Figure 3 shows a side view of the inner casing in which its perforations can be seen.
Figure 4 shows a frontal view of the inner casing.
Figure 5 shows a detailed view of the constructive elements of the silencer.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] In light of the commented on figures and in accordance with the adopted numbering, a preferred embodiment can be seen in same, however it is not by way of limitation on the invention. This consists of an improved an outer casing (1) and an inner casing (2), which are cylindrical, concentric and with a space between them into which a layer of sound absorbing material (4) has been placed, in addition there are openings at the ends for the inlet gases (5) and another for the outlet of the gases (6).

[0015] The inner casing (2) has some perforations (3) along the length of its wall by means of which the sound absorbing layer is brought into direct contact with the gas.

[0016] In the space formed on the inside of the inner casing the ends of a core (9) are assembled onto some elements of support and fastening (7), arranged both at the entrance and the exit of the gases. Onto this core

(9) an endless screw (8) is attached, which, allows the gases to pass and be guided, making them be influenced by the sound absorbing layer.

[0017] Alternatively, the openings for the entry and exit (10) of the gases can be located at a point on the perimeter of the side wall of same.

Claims

1. Improved acoustic silencer, which absorbs and reduces the sound produced by the exhausting of gases from any type of machinery or equipment to the maximum possible, **characterised in that** it is made up by an outer casing (1) and an inner casing (2), by preference cylindrical and concentric, and having a layer of sound absorbing material (4) placed between them, the purpose of which is to absorb and reduce the noise produced by the gases from the entry into the silencer and to the exit; and **in that** the internal casing (2) has perforations (3) along the length of its wall by which direct contact is made between the gas and the sound absorbing material.

2. Improved acoustic silencer according to the above claim, **characterised in that** in the space formed on the inside of the inner casing (2) the ends of a core are assembled onto some elements of support and fastening (7), arranged both at the entrance and the exit of the gases; and **in that** onto this core (9) a endless screw (8) is attached, which, guides the gases through the inside of the silencer.

3. Improved acoustic silencer according to the claim 1, **characterised in that** the inlet opening (5) and the outlet (6) for the gases are arranged, respectively, at the ends of the silencer.

4. Improved acoustic silencer, according to the claim 1, **characterised in that** the inlet opening (5) and the outlet (6) for the gases are arranged at a point along the perimeter of the side wall of the silencer.

FIG. 1

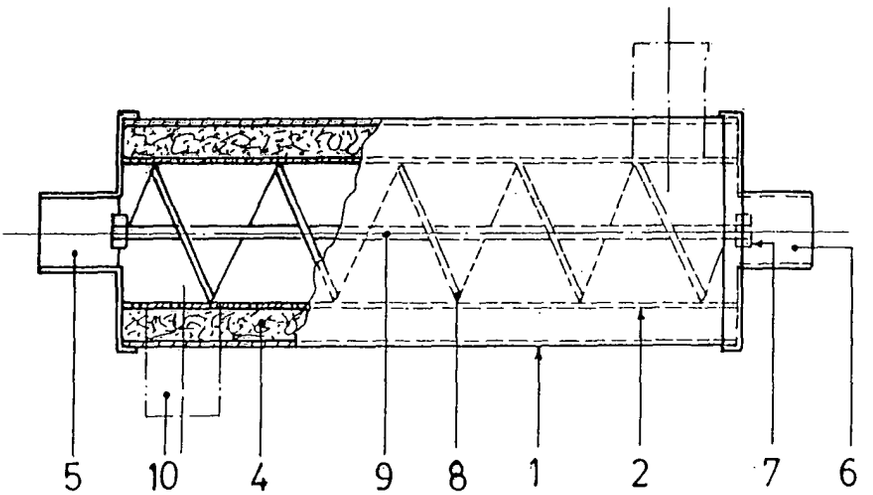


FIG. 2

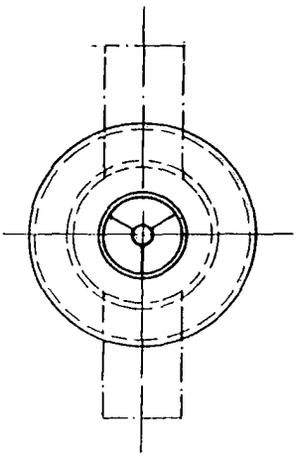


FIG. 3

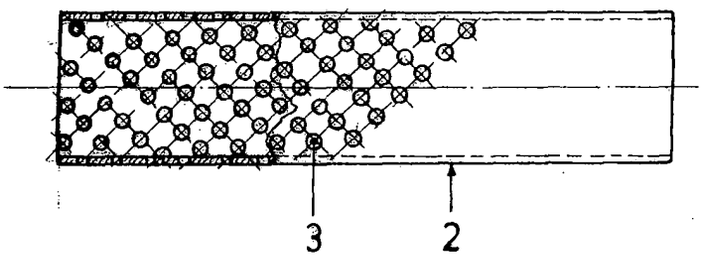


FIG. 4

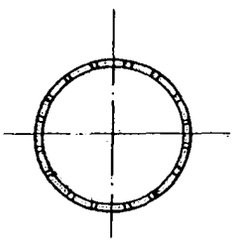
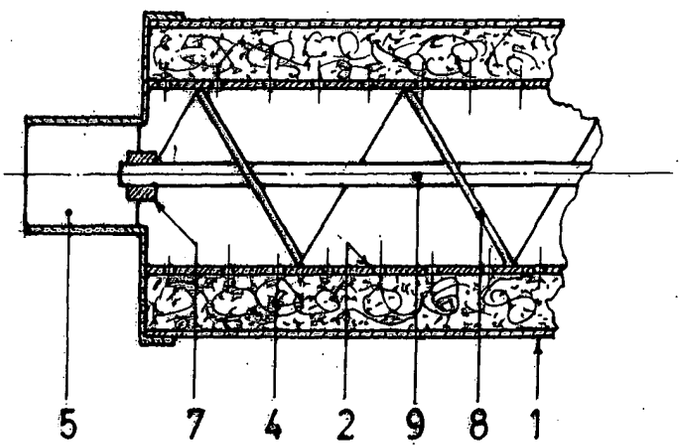


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 04 00 8026

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.7)
X	US 4 667 770 A (DEVANE HARRY M) 26 May 1987 (1987-05-26) * column 2, line 29 - column 4, line 7; figures 1,5 *	1-4	F01N1/12
X	FR 1 149 456 A (ANDRE BOET ET CIE) 26 December 1957 (1957-12-26) * the whole document *	1,3,4	
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A	US 3 851 727 A (GETZ M ET AL) 3 December 1974 (1974-12-03) * column 2, line 22 - column 3, line 5; figures 1,3 *	1,3,4	
A	GB 222 699 A (JOSEPH DUFFILL) 9 October 1924 (1924-10-09) * page 2, line 53 - page 3, line 15; figures 2,3 *	1,2	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

F01N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	29 April 2004	Tatus, W

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 00 8026

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29-04-2004

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82