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(54) A volute casing for fans for use in fan convectors

(57) A casing, in particular, a volute casing (1) which is intended to constitute the housing of the rotor (7) of a fan particularly for fan convectors, comprises a first portion (2) and a second portion (3) that are connected to one another in a coupling plane (4) by releasable connection means (5, 6); the first portion (2) is intended to be connected to the frame of the fan convector or to a part thereof and the second portion (3) is the portion which acts as a closure cover of the casing (1). The first portion (2) is made of a first material having a mechanical stiffness value no greater than that of the material of the frame or part thereof to which the portion is connected and the second portion (3) is made of a second material having a mechanical stiffness value no greater than that of the said first material.

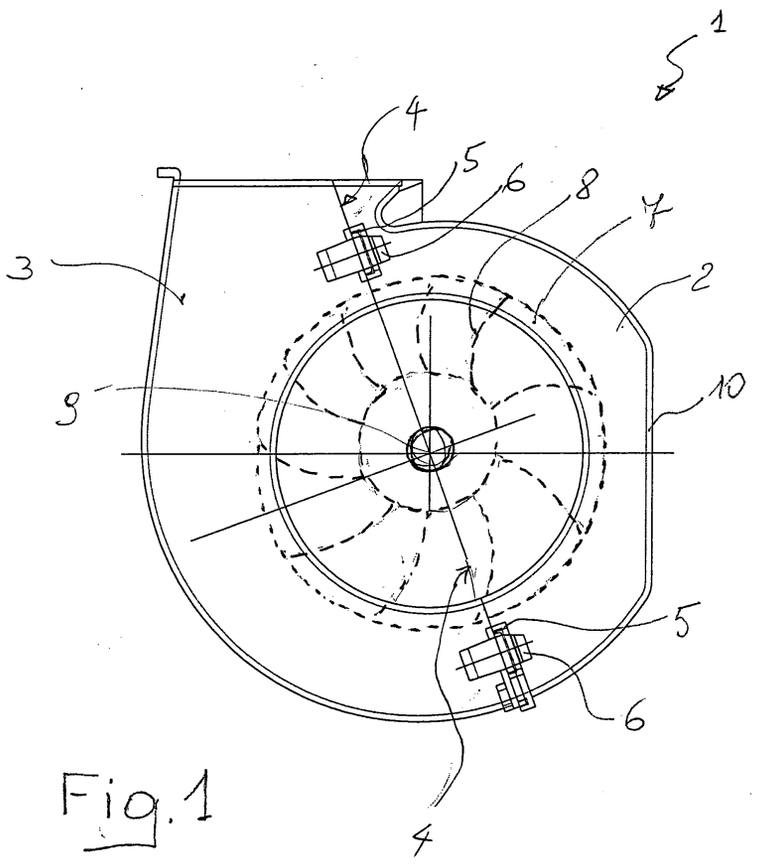

Fig.1

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Description

[0001] The present invention relates to a casing and, in particular, to a volute casing which is intended to constitute the housing of the rotor of a fan particularly for fan convectors and comprises a first portion and a second portion that are connected to one another in a coupling plane by releasable connection means.

[0002] The construction of volute casings in two separate portions is commonly used in the specific field of the manufacture of fan units for fan convectors since, amongst other things, it permits easy mounting of the rotor and quick connection to the frame of the fan convector.

[0003] In fact, a portion of the volute casing is fixed to the frame of the fan convector or to a part thereof, the rotor is positioned inside the portion with the shaft supported by respective bearings and, finally, the volute casing is closed by positioning the second portion on the first, to which it is fixed by connection means which can be released to permit any subsequent dismantling.

[0004] It is known that one of the main problems which affect fan convectors is the generation of noise which is produced by fan units and in particular by the vibrations which arise between the two portions which make up the volute casings in which the rotors are housed because of possible loosening of the connection means which may occur with the passage of time.

[0005] Whereas the portion of the casing that is intended to be fixed to the frame of the fan convector also performs the function of a mechanical support for the entire volute casing and is therefore secured firmly to the frame with little chance of vibrating, clearly, in the event of loosening of the connection means, the other portion which is intended mainly to perform the function simply of a closure cover, can easily vibrate and knock against the first portion, generating annoying noises.

[0006] This is aggravated by the fact that, according to the prior art, both of the portions of which the volute casings are composed are made of metallic material so that mutual knocks and bangs are naturally very noisy.

[0007] The object of the present invention is therefore to provide a volute casing for housing the rotors of fan units of fan convectors of the type indicated in the introduction, with characteristics such as to prevent the production of annoying noises in operation.

[0008] According to the present invention, this object is achieved by means of a volute casing according to Claim 1.

[0009] The present invention, enables the quietest possible fan convector to be produced.

[0010] The characteristics and the advantages of the present invention will become clear from the following detailed description of an embodiment which is illustrated by way of non-limiting example in the appended drawings, in which:

Figure 1 shows the volute casing according to the present invention in a section transverse the axis of rotation of the rotor,

Figure 2 shows the first portion of the casing of Figure 2 in cross-section,

Figure 3 shows the second portion of the casing of Figure 2 in section,

Figure 4 is a view of the first portion of the casing of Figure 2 taken from the side having the respective connection means, and

Figure 5 is a view of the second portion of the casing of Figure 3 taken from the side having the respective connection means.

[0011] With reference to the above-mentioned drawings, the volute casing, generally indicated 1, is constituted by a first portion 2 and by a second portion 3 which are connected to one another in a coupling plane 4 by connection means constituted by pairs of slots 5 formed in the portion 2 and by pairs of teeth 6 formed in the portion 3.

[0012] The rotor, indicated 7, which has blades 8 and is shown schematically in Figure 1, is housed inside the volute casing 1 in conventional manner. The axis of rotation of the rotor is indicated 9.

[0013] The portion 2 of the casing is intended to be connected, by means of its flattened region 10, to the frame of the fan convector, not shown, or to a part thereof such as, for example, the condensation collecting tray, which is also not shown but is conventional.

[0014] The portion 2 is thus intended also to perform a structural support function and the material of which it is made must therefore have sufficient mechanical stiffness. Normally, this portion 2 is made of bent sheet metal or pressed aluminium or even, preferably, of a rigid plastics material the mechanical stiffness value of which is at most equal to, but no greater than, that of the material of the frame or part thereof to which the portion 2 is connected.

[0015] The portion 3 which is to be connected to the portion 2 in the plane 4 performs mainly the function of a closure cover of the casing 1 and can therefore be made entirely of a material having low mechanical stiffness such as, for example, an elastomeric plastics material, or natural or synthetic rubber.

[0016] Preferably, it is made of a plastics material having a mechanical stiffness value no greater than that of the material of which the first portion 2 is made.

[0017] If the first portion 2 is made of a plastics material having a stiffness value less than that of the material of the frame or part thereof to which the portion 2 is connected, the second portion 3 is preferably also made of the same material.

[0018] As a result, in the event of loosening of the connection means 5 and 6, any vibrations that may arise

between the two portions 2 and 3 of the casing 1 in the coupling plane 4 do not generate annoying noises such as those which might result if both portions 2 and 3 were made of metallic material.

[0019] Alternatively, the portion 3 which has the function of a cover may be made of the above-mentioned material having low mechanical stiffness purely on the periphery 11 which is intended to come into contact with the portion 2 of the casing in the coupling plane 4.

Claims

1. A casing, in particular, a volute casing (1) which is intended to constitute the housing of the rotor (7) of a fan particularly for fan convectors, comprising a first portion (2) and a second portion (3) that are connected to one another in a coupling plane (4) by releasable connection means (5, 6), and in which the first portion (2) is intended to be connected to the frame of the fan convector or to a part thereof and the second portion (3) is the portion which acts as a closure cover of the casing (1), **characterized in that** the first portion (2) is made of a first material having a mechanical stiffness value no greater than that of the material of the frame or part thereof to which the portion is connected and the second portion (3) is made of a second material having a mechanical stiffness value no greater than that of the said first material.

2. A casing according to Claim 1, **characterized in that** the first material is a metallic material.

3. A casing according to Claim 1, **characterized in that** the first material is a plastics material.

4. A casing according to Claims 1 and 3, **characterized in that** the second material is a plastics material having a mechanical stiffness value equal to that of the first material.

5. A casing according to Claims 1 to 4, **characterized in that** the second casing portion (3) is made of the said second material at least on the periphery (11) which is in contact with the first portion (2) in the coupling plane (4).

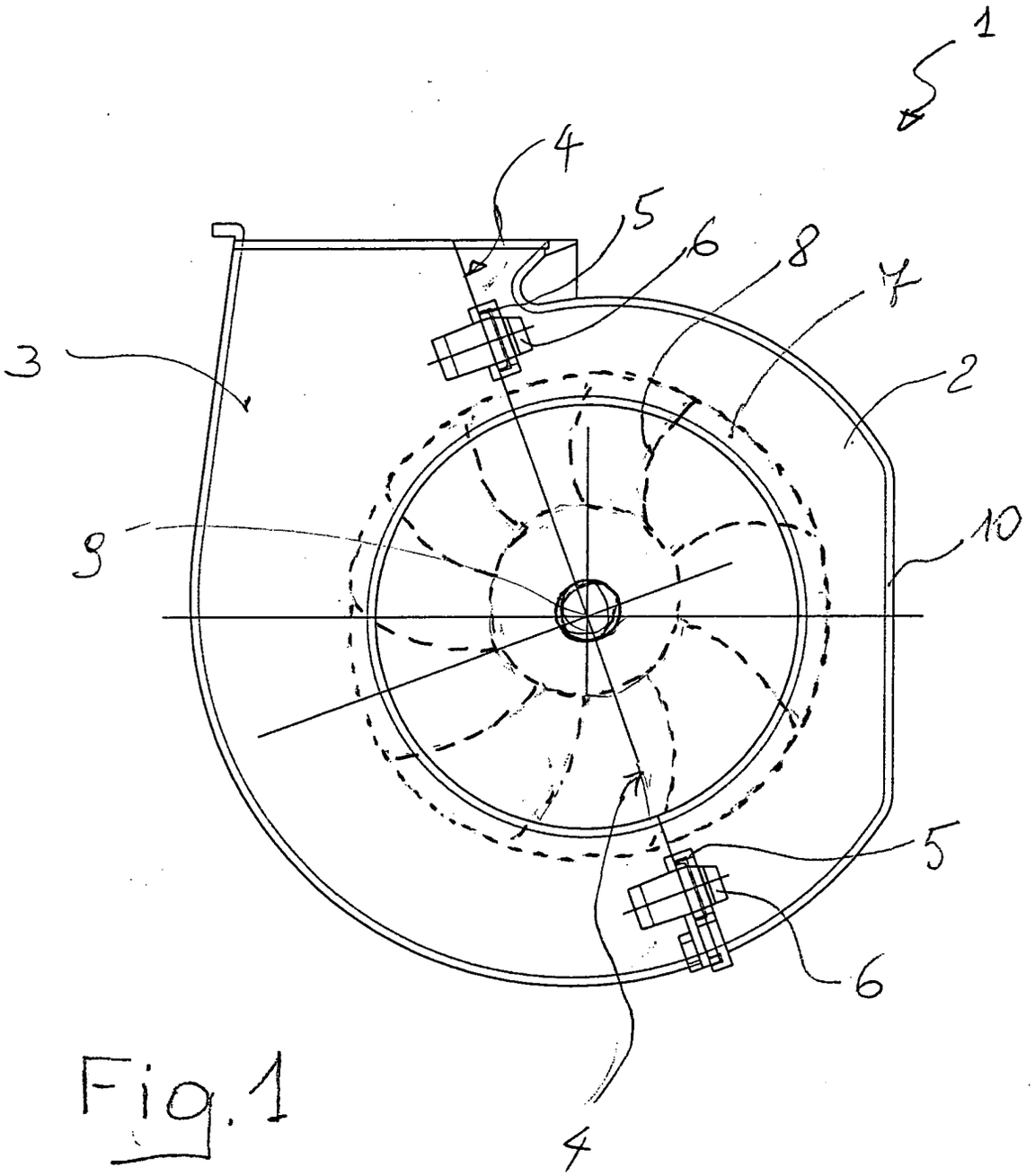

Fig.1

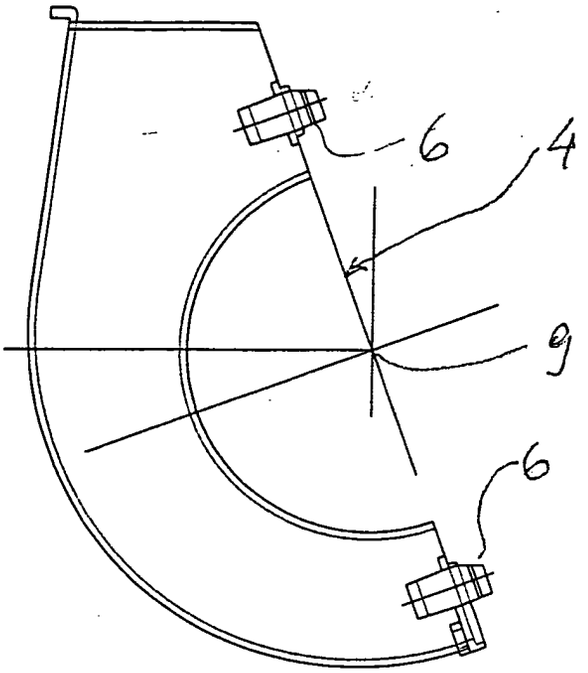

Fig. 3

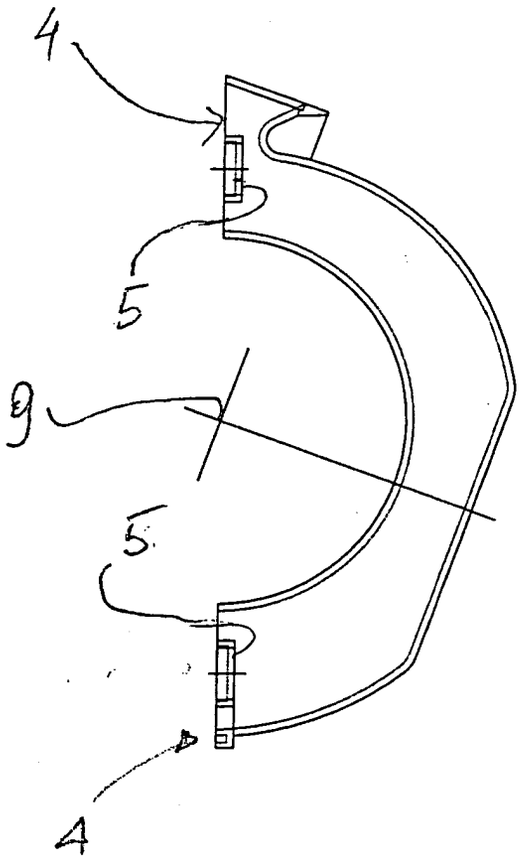

Fig. 2

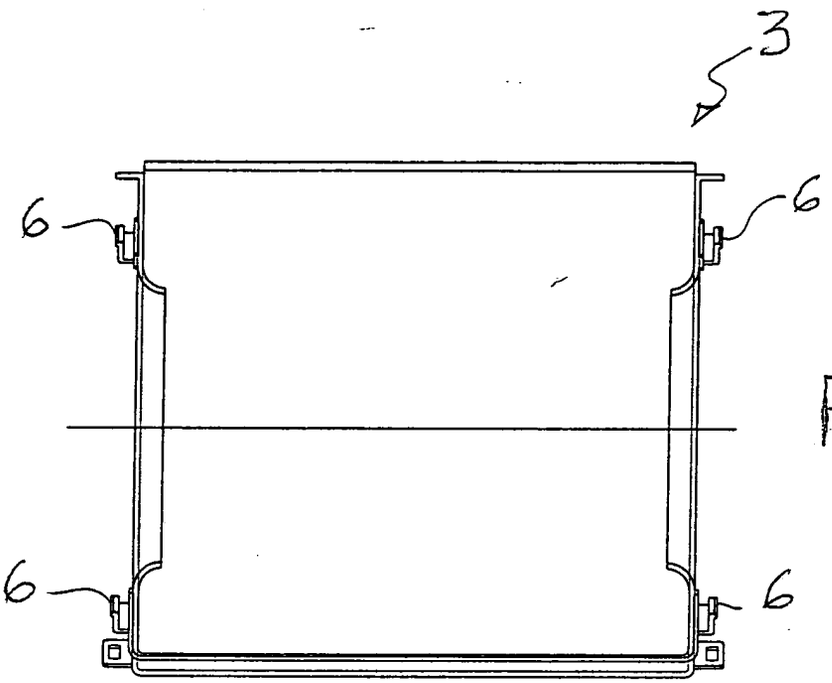

Fig.5

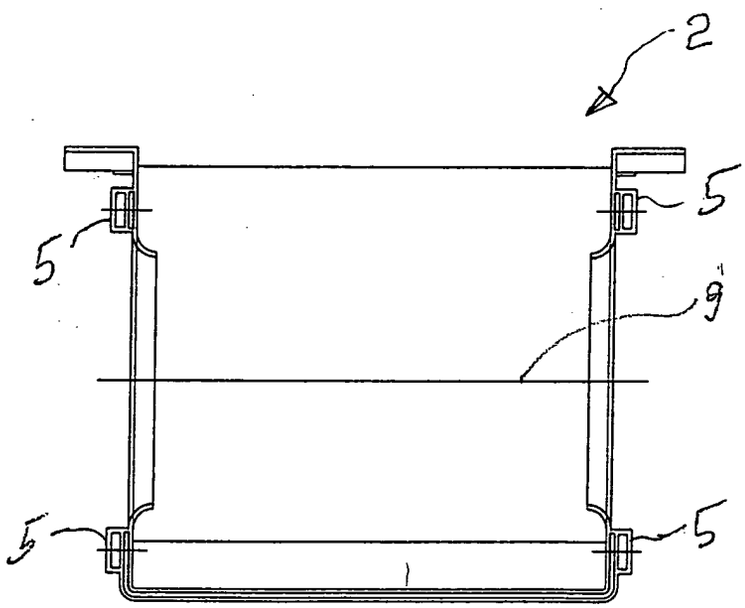

Fig.4

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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5614

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	18 February 2004	Di Giorgio, F

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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