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(54) Fan casing

(57) This invention relates to a fan for gas boilers with proof combustion, comprising a centrifuge rotor housed inside a spiral made up of two die-cast aluminum semi-shells, of which one is externally provided with a bracket for the support and centering of the motor-rotor assembly made from one die cast piece together with its semi-shell.

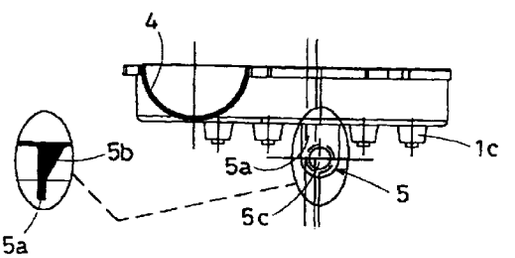

FIG. 1

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Description

[0001] This patent application refers to a fan for installation in gas boilers with proof combustion, which is provided with a die-cast aluminum casing including a bracket for the support and centering of the motor-rotor assembly.

[0002] As it is known, the combustion chamber of the "proof combustion" boilers is hermetically sealed and works in light depression thanks to the suction action of a fan, used to suck in the fumes of the combustion chamber and push them along the flue from which the said fumes are expelled into the air.

[0003] The fan comprises a centrifuge rotor with cylindrical cage configuration housed inside a spiral composed of two semi-shells that is rigidly fixed to the boiler frame. The motor-rotor assembly is supported on the outside of the back wall of the spiral with the interposition of some anti-vibration rubber collars, used to prevent the assembly vibrations from being integrally transmitted to the spiral and from the spiral to the boiler casing, thus generating annoying noises.

[0004] It is a common practice today to screw a bracket used as an additional support for the motor-rotor assembly onto the external side of the back wall of the spiral. The bracket supports the whole weight of the motor-rotor assembly during the operation of the fan that is fixed to the boiler casing with the driving shaft in perfectly horizontal position.

[0005] Since the orientation of the fan on the boiler casing is known in advance, the bracket is located in such a position that, once the fan is installed, the bracket is located on the projection of the barycenter of the motor-rotor assembly, in order to represent a perfectly centered point of support with respect to the barycenter of the motor-rotor assembly above it.

[0006] The assembling and fixing of the bracket to the fan casing is usually carried out manually. Even if this operation is carried out by specialized workers, it is not possible to guarantee with utmost certainty that all the brackets are positioned exactly in the same position on the fan casing.

[0007] Even a small inaccuracy in the bracket position may prejudice the perfect centering of the motor-rotor assembly with respect to the casing, thus causing strong vibrations able to generate annoying noises during the operation of the fan.

[0008] The purpose of the present invention is to find a solution to guarantee with utmost accuracy and reliability the perfect position of the bracket outside the spiral of the fans that are normally used in proof combustion boilers.

[0009] This purpose is obtained with a fan with die-cast aluminum casing including the above-mentioned bracket located outside the fan spiral.

[0010] For clearer explication, the description of the fan model according to this invention continues with reference to the enclosed drawings, which only have an explanatory, not restrictive purpose, where:

- Fig. 1 is a view of the first of the two semi-shells used to build the fan casing according to this invention;
- Fig. 2 is a view of the internal side of the first of the two semi-shells as mentioned above;
- Fig. 3 is a view of the external side of the first of the two semi-shells as mentioned above;
- Fig. 4 is a view of the second of the two semi-shells used to build the fan casing according to this invention;
- Fig. 5 is a view of the internal side of the second of the two semi-shells as mentioned above;
- Fig. 6 is a view of the external side of the second of the two semi-shells as mentioned above;
- Fig. 7 and 8 are two views with different angle of the fan provided with the motor-rotor assembly.

[0011] With reference to the above mentioned figures, the fan according to this invention features an ordinary centrifuge rotor with cylindrical cage configuration - not shown in the enclosed drawings since it is of known structure and does not have anything to do with the present invention - housed inside a spiral composed of two semi-shells (1 and 2).

[0012] The bottom wall (1a) of the first semi-shell (1) features a small central hole (1b) for the shaft of the electrical motor (M) that operates the above mentioned rotor, which is screwed onto the external side of the bottom wall (1a) provided with an annular series of drilled indentations (1c) used to fix the support U bolt (C) of the motor-rotor assembly with the interposition of anti-vibration rubber collars (G).

[0013] The bottom wall (2a) of the second semi-shell (2) features a wide circular window (2b) that represents the suction opening of the fan.

[0014] The fan casing is obtained by matching the two semi-shells (1 and 2) to obtain a spiral ending with a nozzle of circular delivery (4) obtained half with the semi-shell (1) and half with the semi-shell (2).

[0015] It must be noted that according to the present invention each semi-shell (1 and 2) is obtained from one die-cast aluminum piece.

[0016] The external wall of the semi-shell (1) features a bracket (5) obtained from one die-cast piece together with the semi-shell, composed of a small shelf (5a) that projects perpendicularly from the said wall and is tangent to the circumference on which the above mentioned annular series of drilled indentations is distributed.

[0017] The shelf (5a) is hardened by a lateral pair of triangular pieces and features a central hole (5c) on which the anti-shock rubber (G) is located to support the weight of the motor-rotor assembly, once the fan is installed inside the boiler.

Claims

1. Fan for gas boilers with proof combustion, provided with a die-cast aluminum casing including a bracket for the support and centering of the motor-rotor assembly, of the type comprising a centrifuge rotor housed inside a spiral made up of two symmetrically matched die-cast aluminum semi-shells (1 and 2), characterized in that the semi-shells (1 and 2) are obtained from one die-cast aluminum piece and the external wall of the semi-shell supporting the motor-rotor assembly features a bracket (5) which is obtained from one die-cast piece together with the semi-shell and composed of a small shelf (5a) that projects perpendicularly from the said wall and is tangent to the circumference on which an annular series of drilled indentations (1c) is distributed, with the indentations located on the external wall of the semi-shell to support the U bolt supporting the motor-rotor assembly.

2. Fan according to the claim 1, characterized in that the small shelf (5a) is hardened by a lateral pair of triangular pieces (5b) and features a central hole (5c).

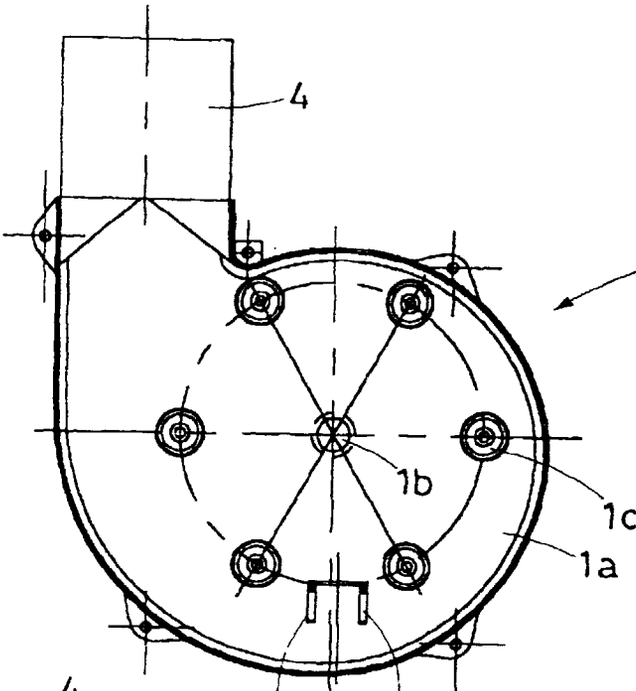

FIG. 3

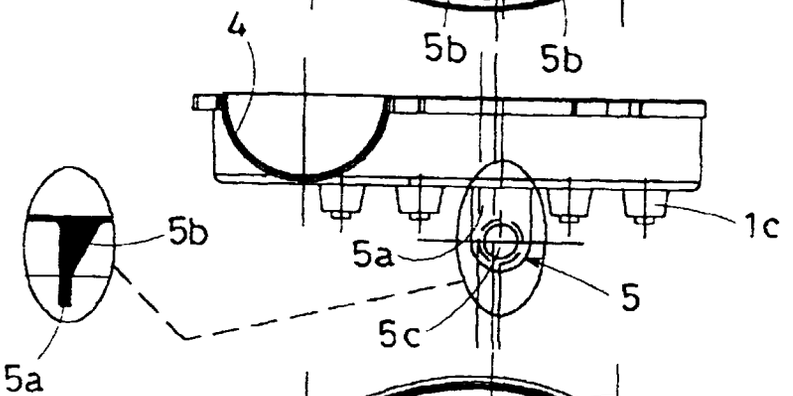

FIG. 1

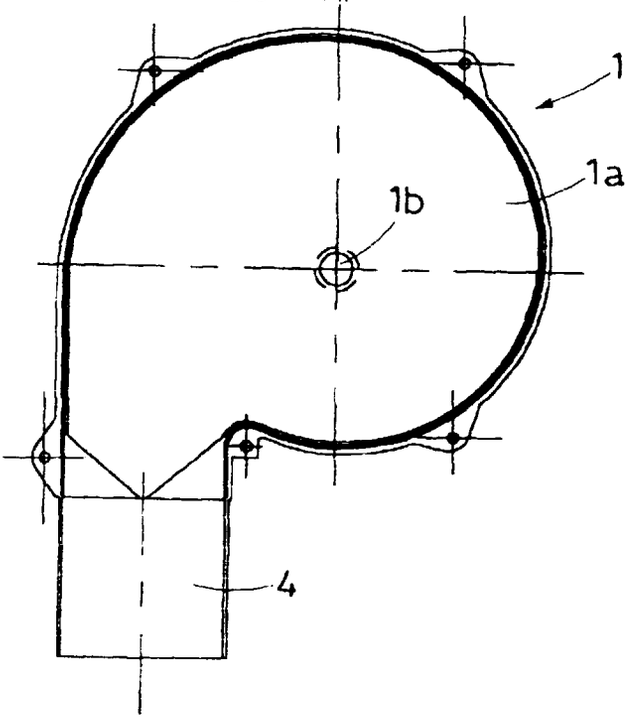

FIG. 2

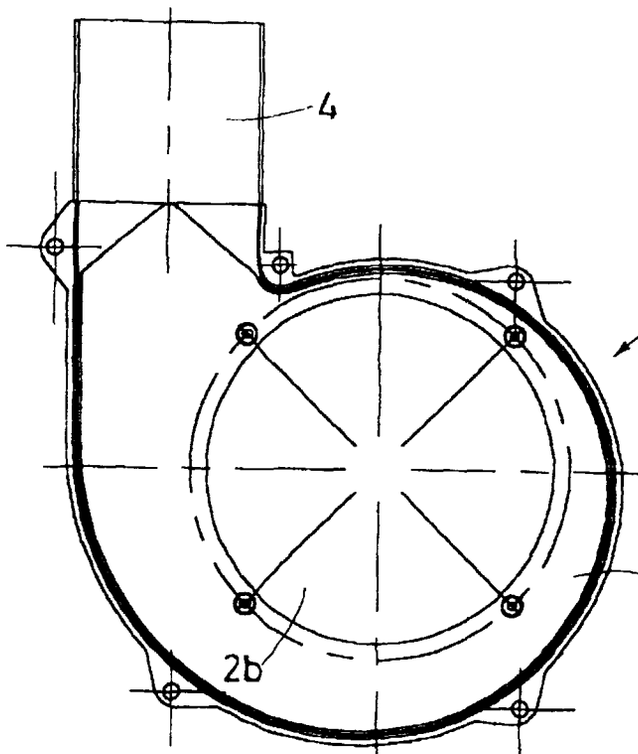

FIG. 5

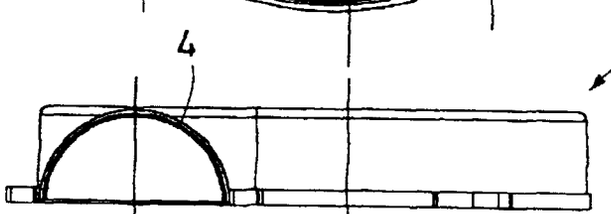

FIG. 4

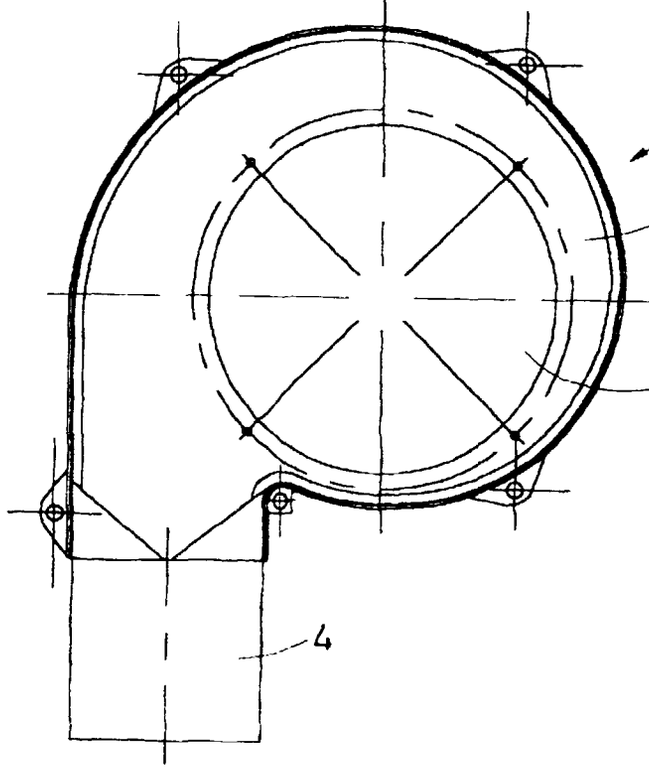

FIG. 6

FIG. 8

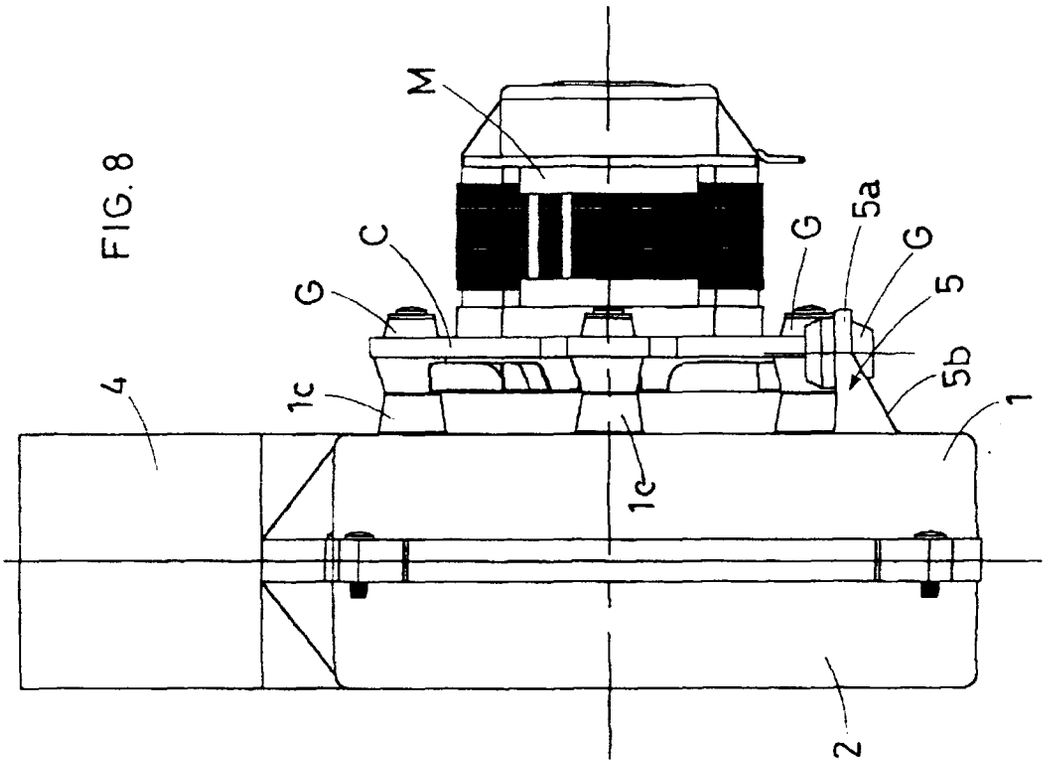

FIG. 7