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(54) **Ventilation unit**

Lüftungseinheit

Unité de ventilation

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EP 2 693 135 B1

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Description

Field of the Art

[0001] The present invention relates to air driving means for driving the air in ventilation systems, proposing a ventilation unit intended for being incorporated in industrial ventilation systems, with structural features determining an advantageous embodiment for the silent operation of said unit.

State of the Art

[0002] It is important to prevent the noise produced by the operating fans which drive the air in both domestic and industrial ventilation systems from propagating through the structures supporting the system, which is conventionally solved by providing the fans with soundproofing solutions.

[0003] Axial tubular fans which are intercalated in the air circulation ducts are known for driving the air in ventilation systems, the body of these fans being formed by a cylindrical casing in which an air driving element and the operating elements for the operation thereof are housed, said casing being coupled at its ends to an air circulation duct.

[0004] The intercalated arrangement of the assembly of these fans in the air ducts favors the transmission of operating noise through said air circulation ducts. To prevent that transmission of fan operating noise, conventionally provided silencers are incorporated on the sections of the air duct to which the fan is coupled, or intercalated between said sections of the air duct and the fan, before and after same, as in US Patent Application Publication US 2008/0000617 A1, which causes a considerable longitudinal prolongation of the fan, limiting the assembly possibilities of the system of application, said prolongation further being determined by the diameter of the air duct in which the fan is arranged, since longer silencers are required the greater the diameter of the air duct.

[0005] For helico centrifugal fans which are intercalated in air ducts, a solution has been developed to that effect according to Spanish patent application P 201100220 and European patent application EP 2 492 515 belonging to the same patentee as the present invention, by means of structuring the fan with an air passage formed by a convergence cone and a divergence cone, before an air driving propeller, a silencer, which establishes an intermediate conduit between the convergence cone and the divergence cone, being incorporated on that air passage between both cones, a short silencer being necessary with this solution to achieve effective soundproofing.

[0006] However, the ventilation units used in industrial ventilation systems have a structural formation which comprises a casing-body provided with a direct air inlet opening at one end and an air outlet opening at the other end, including therein an air driving propeller facing the air inlet opening; the adaptation of solutions which allow achieving an effective soundproofing with small silencers, given the large diameter of the air ducts to which said units are normally coupled during application, and which require oversized silencers with conventional solutions of placing silencers on the air ducts being of particular interest in these ventilation units.

Object of the Invention

[0007] The invention proposes a ventilation system with air ducts and a ventilation unit which is made with a structural formation that allows achieving a very effective soundproofing effect with a small silencer regardless of the diameter of the air ducts to which the unit is coupled.

[0008] This ventilation unit in the ventilation system object of the invention comprises a structural assembly formed by a casing-body presenting an air inlet opening and an air outlet opening, attached to said air ducts, at respective ends of the casing-body, internally housing an air driving propeller arranged in the air inlet opening, said air inlet opening being shifted outwards, there being included between the air inlet opening and the air driving propeller a tubular silencer, which establishes an air passage conduit having a smaller diameter than the air inlet mouth, but not an air divergence cone as in European patent application EP 2 492 515.

[0009] A suitably soundproofed ventilation unit with very minimal increase in the longitudinal dimension is thus obtained, since the silencer which is arranged between the air inlet mouth and the air driving propeller has a diameter smaller than the external air ducts to which the ventilation unit is coupled, therefore requiring a shorter silencer compared with the silencers arranged between the openings of the ventilation unit and the external air ducts in conventional solutions.

[0010] With this solution of the invention, the ventilation unit offers advantageous conditions for assembly in the systems of application since the soundproofing minimally increases the longitudinal dimension, allowing a more versatile assembly of the ventilation unit in the systems of application.

[0011] Therefore, said ventilation unit object of the invention has very advantageous functional features, acquiring its own identity and preferred character with respect to conventional ventilation units having the same application.

Description of the Drawings

[0012]

Figure 1 shows an exploded perspective view of a ventilation unit made according to the invention.

Figure 2 is a schematic longitudinal section view of a ventilation unit according to the invention, air circulation through the unit being indicated with lines.

Detailed Description of the Invention

[0013] The object of the invention relates to a ventilation system with air ducts and a ventilation unit of the types used in industrial ventilation, the ventilation unit comprising a casing-body (1) inside which there is housed an air driving propeller (2) arranged in an air inlet opening (3) defined at one end of the mentioned body-unit (1), whereas an air outlet opening (4) is defined at the other end, both openings (3 and 4) establishing respective couplings for attachment to respective external air ducts.

[0014] According to the invention, the air inlet opening (3) is shifted outwards with respect to the casing-body (1), there being included between the air inlet opening and the air driving propeller (2) a tubular silencer (5), which establishes an air passage conduit having a smaller diameter than the air inlet opening (3) between the mentioned air inlet opening (3) and said air driving propeller (2).

[0015] The silencer (5) is thus included integrated in the ventilation unit itself in an area having a smaller diameter than the couplings to the external air ducts of application, so said silencer (5) must be shorter than the conventional silencers which are arranged in the mentioned external air ducts for coupling the ventilation units in the systems of application, such that with this solution of the invention, in the assembly of the ventilation unit the arrangement for soundproofing the operation of the ventilation unit only involves a minimum increase in the length of the ventilation unit, allowing better conditions and greater versatility for assembly in the systems of application.

Claims

1. A ventilation system comprising air ducts and a ventilation unit formed by a casing-body (1) presenting an air inlet opening (3) and an air outlet opening (4), attached to said air ducts, at respective ends of the casing-body (1), an air driving propeller (2) arranged in the air inlet opening (3) being located within the casing-body (1), wherein the air inlet opening (3) is shifted outwards with respect to the casing-body (1), there being included between the air inlet opening and the air driving propeller (2) a tubular silencer (5), but not an air divergence cone, and said air inlet opening (3) and air outlet opening (4) are each attached to an air duct, and **characterized in that** the silencer establishes an air passage conduit having a smaller diameter than the air inlet opening (3) between said air inlet opening (3) and said air driving propeller (2).

Patentansprüche

1. Lüftungssystem, umfassend Luftschächte und eine von einem Gehäusekörper (1), der eine Lufteinlassöffnung (3) und eine Luftauslassöffnung (4) aufweist, gebildete Lüftungseinheit, die an den jeweiligen Enden des Gehäusekörpers (1) an den Luftschächten angebracht ist, einen Luft antreibenden Propeller (2), der in der innerhalb des Gehäusekörpers (1) befindlichen Lufteinlassöffnung (3) angeordnet ist, wobei die Lufteinlassöffnung (3) in Bezug auf den Gehäusekörper (1) nach außen verschoben ist, wo zwischen der Lufteinlassöffnung und dem Luft antreibenden Propeller (2) ein rohrförmiger Schalldämpfer (5), jedoch kein Luftdivergenzkegel, vorgesehen ist, und die Lufteinlassöffnung (3) und Luftauslassöffnung (4) jeweils an einem Luftschacht angebracht sind, und **dadurch gekennzeichnet, dass** der Schalldämpfer zwischen der Lufteinlassöffnung (3) und dem Luft antreibenden Propeller (4) einen Luftdurchlasskanal mit einem kleineren Durchmesser als die Lufteinlassöffnung (3) bildet.

Revendications

1. Système de ventilation comprenant des conduites d'air et une unité de ventilation, formée par un corps-boîtier (1) présentant une ouverture d'amenée d'air (3) et une ouverture d'évacuation d'air (4), attachée auxdites conduites d'air à des extrémités respectives du corps-boîtier (1), une hélice d'entraînement d'air (2) agencée dans l'ouverture d'amenée d'air (3) située à l'intérieur du corps-boîtier (1), dans lequel l'ouverture d'amenée d'air (3) est décalée vers l'extérieur par rapport au corps-boîtier (1), un silencieux tubulaire (5) étant inclus entre l'ouverture d'amenée d'air et l'hélice d'entraînement d'air (2), mais pas un cône de divergence d'air, et lesdites ouverture d'amenée d'air (3) et ouverture d'évacuation d'air (4) sont attachées chacune à une conduite d'air, **caractérisé en outre en ce que** le silencieux établit une conduite de passage d'air ayant un diamètre inférieur à l'ouverture d'amenée d'air (3) entre ladite ouverture d'amenée d'air (3) et ladite hélice d'entraînement d'air (2).

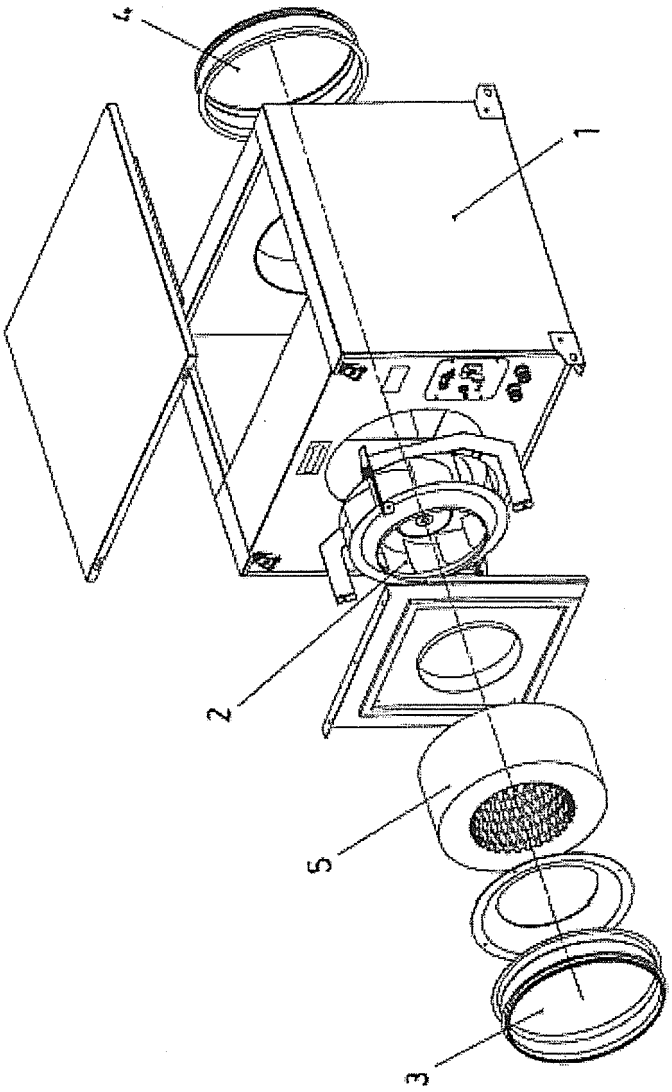

Fig.1

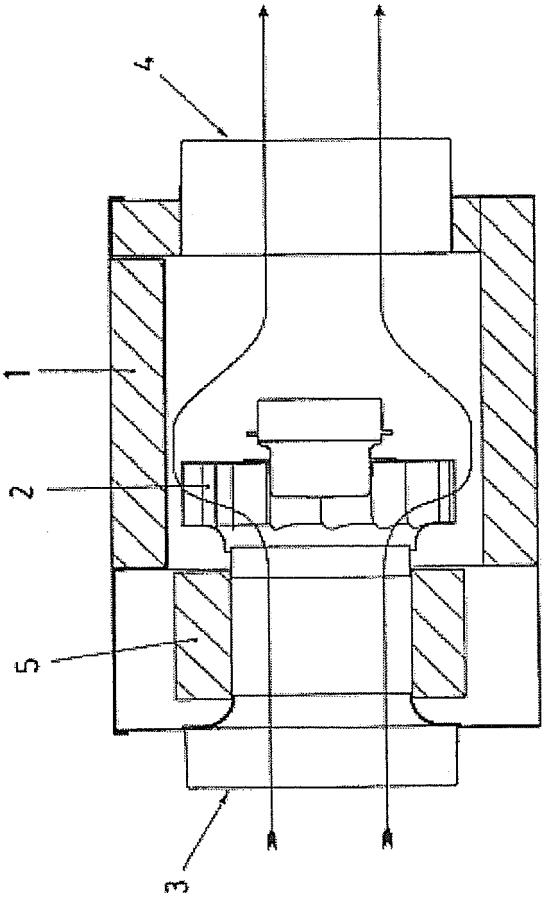

Fig.2

REFERENCES CITED IN THE DESCRIPTION

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- ES P201100220 **[0005]**
- EP 2492515 A **[0005] [0008]**