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(54) **DISTRIBUTION UNIT, IN PARTICULAR FOR AIR DISTRIBUTION IN VENTILATION SYSTEMS**

VERTEILEREINHEIT, INSBESONDERE ZUR LUFTVERTEILUNG IN BELÜFTUNGSANLAGEN

UNITÉ DE DISTRIBUTION, EN PARTICULIER POUR LA DISTRIBUTION D'AIR DANS DES SYSTÈMES DE VENTILATION

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a distribution unit, in particular for air distribution in ventilation systems or the like.

STATE OF THE ART

[0002] As is known, in various fluid distribution systems, such as for example controlled mechanical ventilation (VMC) systems, distribution units are used which, in general, receive an inlet flow and divide it into a plurality of outlet flows or, vice versa, receive a plurality of inlet flows and combine them into a single outlet flow.

[0003] A typical distribution unit therefore comprises a container having an internal chamber and provided with an inlet fitting and a plurality of outlets, shaped so as to receive fittings, for example a bayonet fitting, interlocking fitting, etc., which are then connected to pipe sections. In certain cases, the pipes can be joined directly to the container, without the need for fittings.

[0004] The problem arises of uniformly distributing the inlet fluid flow to all the outlets. In general, in fact, it is possible that the inlet fluid flow is not distributed evenly to all the outlets but that some outlets receive a higher flow rate than others.

[0005] For example, in controlled mechanical ventilation (VMC) systems, air is circulated by machines with different air flow rates. The distribution units divide the air flow from the ventilation machines into several outlets which are connected to pipes of different lengths.

[0006] Certain known distribution units provide a deflector, which consists of a substantially flat plate arranged in front of the inlet which intercepts the flow entering the unit, essentially for the purpose of reducing the noise of the air circulating in the unit. Document KR 2014 0005292 U discloses a distribution unit with a deflector.

[0007] However, this solution, like other similar ones, is not capable of uniformly distributing the flow to the various outlets, especially if there are numerous outlets.

SUBJECT AND SUMMARY OF THE INVENTION

[0008] The object of the present invention is to overcome the drawbacks of the prior art described herein in a particularly simple and efficient manner.

[0009] In particular, the object of the invention is to provide a distribution unit, in particular for air distribution in ventilation systems or the like, which allows a uniform distribution of the inlet flow to all the outlets of the unit, which is both simple and inexpensive to manufacture, and practical and effective to use.

[0010] Therefore, the present invention relates to a distribution unit, in particular for air distribution in ventilation systems or the like, as defined in the appended claim 1.

[0011] Preferred features of the invention are defined

in the dependent claims.

[0012] The invention allows the volume of air entering the unit to be distributed uniformly to all the perimetric outlets with which the unit is provided, without causing excessive pressure loss and at the same time being simple and inexpensive to manufacture, and practical and effective to use.

[0013] The air, for example produced by VMC machines (i.e., by a ventilation system) with variable flow rates (indicatively, but not necessarily, between 100 m³/h and 650 m³/h), is distributed uniformly to the outlets thanks to the particular deflector assembly housed in the distribution unit.

[0014] In particular, experimental tests confirmed that, in distribution units provided with the deflector assembly according to the invention, the inlet flow rate is distributed, with a tolerance of ± 10 m³/h, uniformly to all the outlets of the unit.

[0015] Comparative tests carried out by means of simulations have shown that, in similar distribution units devoid of the deflector assemblies according to the invention, the differences in flow rates between the various outlets can be as high as 70 m³/h; and the use of a flat-wall deflector according to the prior art results in a difference of about 40 m³/h.

[0016] In addition, the deflector assembly housed inside the distribution unit contributes to reducing the noise of the distribution unit and also to giving rigidity and strength to the casing of the distribution unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Further features and advantages of the present invention will be apparent from the following description of a non-limiting embodiment thereof, with reference to the figures of the accompanying drawings, wherein:

- Figure 1 is a perspective view of a distribution unit in accordance with the invention;
- Figure 2 is a perspective view, with parts removed for clarity, of the unit in Figure 1;
- Figure 3 is a longitudinal sectional view, with parts removed for clarity, of the unit in Figure 1;
- Figure 4 is an enlarged scale view of a detail of the section in Figure 3;
- Figure 5 is a perspective view, on an enlarged scale, of a further detail of the unit in Figure 1;
- Figure 6 is a longitudinal sectional view, with parts removed for clarity, of a variant of the distribution unit in accordance with the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

[0018] With reference to Figures 1 to 3, a distribution unit 1, in particular for air distribution in ventilation systems, comprises a casing 2, for example made of plastic material (plastic, i.e., polymeric material), in particular a

substantially rigid polymeric material, having an inlet 3 and a plurality of outlets 4.

[0019] The casing 2 is box-shaped and has walls 5 which delimit an internal chamber 6.

[0020] The casing 2 can have different shapes and sizes, also depending on the use for which the unit 1 is intended.

[0021] In the non-limiting example shown, the casing 2 has the shape of a parallelepiped and the walls 5 comprise a pair of opposite quadrangular (for example, square) base walls 7 and four rectangular side walls 8 which join the base walls 7.

[0022] In the illustrated embodiment, but not necessarily, the casing 2 is formed by two half-shells 11 coupled together and also comprises an insulating structure 12 positioned inside the walls 5 and made of a material having thermal and acoustic insulation properties, for example, a polymeric foam material.

[0023] The inlet 3 is defined by an opening 13, formed through a first wall 5a of the casing 2. In the illustrated example, the wall 5a provided with the inlet 3 is one of the side walls 8, but it is understood that the inlet 3 can be formed in any other wall 5 of the casing 2, even in one of the base walls 7.

[0024] The opening 3 is associated with an inlet fitting 14 shaped to engage an external pipe with the possibility of different connection diameters and which brings a flow of fluid (for example, air) to the unit 1.

[0025] The outlets 4 are positioned on one or more second walls 5b of the casing 2, for example, on one or more side walls 8, and are defined by respective openings 15 formed through the walls 5b.

[0026] Advantageously, but not necessarily, the openings 15 are closed by respective closing tabs 16, which can be torn off to open the respective opening 15. Each tab 16 has a weakened break line joining the tab 16 to the casing 2 and defines a tear-off opening for removing the tab 16 and opening the respective opening 15. It is understood that the openings 15 can be closed by other types of closing elements and be provided with other opening systems.

[0027] Once the openings 15 have been opened, the outlets 4 can be connected by means of respective outlet fittings (not shown) to external pipes.

[0028] The outlets 4 can be arranged in various ways and have different shapes and sizes. In the illustrated embodiment, the outlets 4 are all identical to each other and regularly spaced apart on the walls 5b. In particular, there are two superimposed rows of three outlets 4 arranged side by side on each wall 5b.

[0029] With specific reference to Figures 2 and 3, the unit 1 comprises a deflector assembly 20 housed inside the casing 2 in the chamber 6.

[0030] The deflector assembly 20 is positioned in front of the inlet 3 and centrally in the chamber 6.

[0031] In particular, the deflector assembly 20 extends along and about a central axis A of the unit 1, perpendicular to the base walls 7, and is symmetrical with respect

to a middle plane P passing through the axis A (i.e., containing the axis A) and perpendicular to the inlet 3 (and therefore passing through a geometric centre of the opening 13 defining the inlet 3).

[0032] The deflector assembly 20 comprises a plurality of fins 21 arranged about the axis A and extending parallel to the axis A between a pair of opposite walls 5, in this case between the base walls 7.

[0033] Also referring to Figure 4, each fin 21 has a pair of opposite faces 22, 23, curved or flat, joined by a pair of sides 24. The faces 22, 23 have a greater extension than the sides 24.

[0034] Preferably, but not necessarily, the faces 22, 23 are substantially parallel and the fins 21 have a constant thickness (measured in a plane perpendicular to the axis A between the faces) and a constant cross section (parallel to the axis A).

[0035] The fins 21 are positioned in a central region of the chamber 6 and have cross sections which are inscribed in a circle C which is perpendicular to the axis A and preferably has its centre on the axis A. According to the invention, the fins 21 have respective sides 24 arranged along said circle C.

[0036] According to the invention, the deflector assembly 20 comprises a first pair of front fins 21a, positioned in front of the inlet 3 to intercept a fluid flow passing through the inlet 3, and a second pair of rear fins 21b, positioned behind the front fins 21a and therefore further away from the inlet 3 (i.e., the fins 21a are closer to the inlet 3 than the fins 21b).

[0037] The fins of each pair of fins 21a, 21b are spaced apart from one another and separated by respective passages 25 aligned with the inlet 3.

[0038] The rear fins 21b are spaced apart from the front fins 21a along the plane P (i.e., the fins 21a and the fins 21b are staggered in a direction perpendicular to the plane P).

[0039] In the examples illustrated in Figures 2-4, the front fins 21a have a curved cross section, in particular shaped as an arc of a circle, and have respective concave faces 22 facing towards the inlet 3.

[0040] The front fins 21a have a prevalent orientation substantially parallel to the inlet 3.

[0041] The front fins 21a (in particular, their faces 22) are shaped so as to divert the fluid flow coming from the inlet 3 at least partly towards the plane P.

[0042] The front fins 21a have respective sides 24 facing each other, delimiting the passage 25, and substantially parallel to each other and to the plane P.

[0043] The front fins 21a are substantially aligned on opposite sides of the plane P and in front of the inlet 3. The two front fins 21a are symmetrical with respect to the plane P.

[0044] The rear fins 21b have a rectilinear cross section and have respective flat, parallel opposite faces 22, 23.

[0045] The rear fins 21b are symmetrical with respect to the plane P and centrally converge in the chamber 6

and are inclined with respect to each other and with respect to the front fins 21a.

[0046] It is understood, however, that the deflector assembly 20 may include a different number of fins 21, with shapes and arrangements different from those described and illustrated herein by way of example as long as within the scope of the claims.

[0047] Advantageously, the deflector assembly 20, or at least the fins 21, are made of a polymeric foam material, for example EPP/EPS, so as to have better noise reduction characteristics. However, the fins 21 can be made of other materials, for example, rigid plastic.

[0048] Advantageously, as shown in particular in Figure 5, the fins 21 are supported by a support 30 comprising a base 31 and a head 32 aligned along the axis A and joined to respective axially opposite ends of the fins 21.

[0049] The support 30 is removable from the casing 2 and can be extracted from the casing 2 through a service opening 33 (Figure 1) formed, for example, in a base wall 7 of the casing 2. The head 32 of the support 30 is shaped so as to close the service opening 33 when the deflector assembly 20 is housed in the casing 2; and is provided with fastening members 34, for example, threaded members, bayonet members, or the like, for coupling to the casing 2. The base 31 is shaped so as to engage a seat formed in the base wall 7 opposite the base wall 7 provided with the service opening 33.

[0050] In the embodiment in Figure 6, the deflector assembly 20 includes a first pair of front fins 21a, positioned in front of the inlet 3, and a second pair of rear fins 21b, positioned behind the front fins 21a and therefore further away from the inlet 3 (i.e., the fins 21a are closer to the inlet 3 than the fins 21b); the rear fins 21b are spaced apart from the front fins 21a along the plane P (i.e., the fins 21a and the fins 21b are staggered in a direction perpendicular to the plane P).

[0051] The front fins 21a have a curved cross section and have respective concave faces 22 facing towards the inlet 3.

[0052] The faces 22 of the front fins 21a have the same radius of curvature and the same centre of curvature and thus define, in cross section, two separated portions of one curved line.

[0053] The rear fins 21b are shaped and arranged symmetrically with respect to the front fins 21a. Therefore, the rear fins 21b are also arc-shaped and have respective concave faces 22 facing a wall 5b of the casing 2 opposite the wall 5a provided with the inlet 3; the fins 21a and the fins 21b have respective convex faces 23 facing each other.

[0054] In this embodiment too, the front fins 21a have a prevalent orientation substantially parallel to the inlet 3; and are shaped so as to divert the flow coming from the inlet 3 at least partly towards the plane P.

[0055] The deflector assembly 20 also comprises a central element 35, positioned along the axis A and extending along the axis A between the base walls 7, for

example, substantially cylindrical with a circular cross section. It is understood that the central element 35 can also be differently shaped.

[0056] Lastly, it is understood that further modifications and variations can be made to the distribution unit as described and illustrated herein without departing from the scope of the accompanying claims.

10 Claims

1. A distribution unit (1), in particular for air distribution in ventilation systems, comprising a box-shaped casing (2) having walls (5) which delimit an internal chamber (6); the casing (2) having an inlet (3), formed in a first wall (5a) of the casing (2), and a plurality of outlets (4), formed in one or more second walls (5b) of the casing (2); wherein the unit (1) comprises a deflector assembly (20) housed inside the casing (2) in the chamber (6); the deflector assembly (20) comprising a plurality of fins (21) positioned in front of the inlet (3) and centrally in the chamber (6) and arranged about a central axis (A) and extending parallel to the axis (A) between a pair of opposite walls (5) of the casing (2); the fins being arranged in pairs of fins (21a, 21b), the fins (21a, 21b) of each pair being substantially aligned with each other in front of the inlet (3) and symmetrically positioned on opposite sides of a middle plane (P) containing the axis (A) and perpendicular to the inlet (3); a first pair of front fins (21a) being positioned in front of the inlet (3), and a second pair of rear fins (21b) being positioned behind the front fins (21a) and farther from the inlet (3) than the front fins (21a); the front fins (21a) being shaped so as to divert a fluid flow coming from the inlet (3) at least partly towards the plane (P); the unit being **characterised in that** the fins (21) are positioned in a central region of the chamber (6) and have cross sections which are inscribed in a circle (C) which is perpendicular to the axis (A), the fins (21) having respective sides (24) arranged along said circle (C).
2. The unit according to claim 1, wherein the fins (21) have a constant thickness and a constant cross section.
3. The unit according to one of the preceding claims, wherein said circle (C) has its centre on the axis (A).
4. The unit according to one of the preceding claims, wherein the fins of each pair of fins (21a, 21b) are spaced apart from one another and separated by respective passages (25) aligned with the inlet (3); and the front fins (21a) are spaced apart from the rear fins (21b) along the plane (P).
5. The unit according to one of the preceding claims,

wherein the front fins (21a) have a curved cross section, in particular shaped as an arc of a circle, and have respective concave faces (22) facing towards the inlet (3).

6. The unit according to claim 5, wherein the concave faces (22) of the front fins (21a) have the same radius of curvature and the same centre of curvature and thus define, in cross section, two separated portions of one curved line.
7. The unit according to one of the preceding claims, wherein the rear fins (21b) have a rectilinear cross section and have respective opposite flat faces (22, 23).
8. The unit according to claim 7, wherein the rear fins (21b) centrally converge in the chamber (6) and are inclined with respect to each other and with respect to the front fins (21a).
9. The unit according to one of the preceding claims, wherein the front fins (21a) and the rear fins (21b) are arc-shaped and have respective concave faces (22) facing towards respective opposite walls (5a, 5b) of the casing (2) and respective convex faces (23) facing towards each other.
10. The unit according to one of the preceding claims, wherein the deflector assembly (20) comprises a central element (35), positioned along the axis (A) and extending along the axis (A) parallel to the fins (21).
11. The unit according to claim 10, wherein the central element (35) is a substantially cylindrical element having a substantially circular cross-section.
12. The unit according to one of the preceding claims, wherein the fins (21) are supported by a support (30) comprising a base (31) and a head (32) aligned along the axis (A) and joined to respective axially opposite ends of the fins (21), the support (30) being removable from the casing (2) through a service opening (33) formed in the casing (2).
13. The unit according to claim 12, wherein the head (32) of the support (30) is shaped so as to close the service opening (33) when the deflector assembly (20) is housed in the casing (2); and is provided with fastening members (34) for coupling to the casing (2).

Patentansprüche

1. Verteilereinheit (1), insbesondere zur Luftverteilung in Lüftungssystemen, umfassend ein kastenförmiges Gehäuse (2) mit Wänden (5), die einen Innenraum (6) begrenzen; wobei das Gehäuse (2) einen Einlass (3), der in einer ersten Wand (5a) des Gehäuses (2) ausgebildet ist, und eine Mehrzahl von Auslässen (4) aufweist, die in einer oder mehreren zweiten Wänden (5b) des Gehäuses (2) ausgebildet sind; wobei die Einheit (1) eine Deflektoranordnung (20) umfasst, die innerhalb des Gehäuses (2) in der Kammer (6) untergebracht ist; wobei die Deflektoranordnung (20) eine Mehrzahl von Lamellen (21) umfasst, die vor dem Einlass (3) und zentral in der Kammer (6) positioniert sind und um eine zentrale Achse (A) herum angeordnet sind und sich parallel zu der Achse (A) zwischen einem Paar gegenüberliegender bzw. entgegengesetzter Wände (5) des Gehäuses (2) erstrecken; wobei die Lamellen in Paaren von Lamellen (21a, 21b) angeordnet sind, wobei die Lamellen (21a, 21b) jedes Paares vor dem Einlass (3) im Wesentlichen miteinander ausgerichtet und symmetrisch auf gegenüberliegenden bzw. entgegengesetzten Seiten einer Mittelebene (P), die die Achse (A) enthält, und senkrecht zu dem Einlass (3) positioniert sind; wobei ein erstes Paar vorderer Lamellen (21a) vor dem Einlass (3) positioniert ist und ein zweites Paar hinterer Lamellen (21b) hinter den vorderen Lamellen (21a) und weiter von dem Einlass (3) entfernt als die vorderen Lamellen (21a) positioniert ist; wobei die vorderen Lamellen (21a) so geformt sind, dass sie einen von dem Einlass (3) kommenden Fluidstrom zumindest teilweise zu der Ebene (P) hin umlenken; wobei die Einheit **dadurch gekennzeichnet ist, dass** die Lamellen (21) in einem zentralen Bereich der Kammer (6) positioniert sind und Querschnitte aufweisen, die in einen Kreis (C) eingeschrieben sind, der senkrecht zu der Achse (A) ist, wobei die Lamellen (21) jeweilige Seiten (24) aufweisen, die entlang des Kreises (C) angeordnet sind.

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ges Gehäuse (2) mit Wänden (5), die einen Innenraum (6) begrenzen; wobei das Gehäuse (2) einen Einlass (3), der in einer ersten Wand (5a) des Gehäuses (2) ausgebildet ist, und eine Mehrzahl von Auslässen (4) aufweist, die in einer oder mehreren zweiten Wänden (5b) des Gehäuses (2) ausgebildet sind; wobei die Einheit (1) eine Deflektoranordnung (20) umfasst, die innerhalb des Gehäuses (2) in der Kammer (6) untergebracht ist; wobei die Deflektoranordnung (20) eine Mehrzahl von Lamellen (21) umfasst, die vor dem Einlass (3) und zentral in der Kammer (6) positioniert sind und um eine zentrale Achse (A) herum angeordnet sind und sich parallel zu der Achse (A) zwischen einem Paar gegenüberliegender bzw. entgegengesetzter Wände (5) des Gehäuses (2) erstrecken; wobei die Lamellen in Paaren von Lamellen (21a, 21b) angeordnet sind, wobei die Lamellen (21a, 21b) jedes Paares vor dem Einlass (3) im Wesentlichen miteinander ausgerichtet und symmetrisch auf gegenüberliegenden bzw. entgegengesetzten Seiten einer Mittelebene (P), die die Achse (A) enthält, und senkrecht zu dem Einlass (3) positioniert sind; wobei ein erstes Paar vorderer Lamellen (21a) vor dem Einlass (3) positioniert ist und ein zweites Paar hinterer Lamellen (21b) hinter den vorderen Lamellen (21a) und weiter von dem Einlass (3) entfernt als die vorderen Lamellen (21a) positioniert ist; wobei die vorderen Lamellen (21a) so geformt sind, dass sie einen von dem Einlass (3) kommenden Fluidstrom zumindest teilweise zu der Ebene (P) hin umlenken; wobei die Einheit **dadurch gekennzeichnet ist, dass** die Lamellen (21) in einem zentralen Bereich der Kammer (6) positioniert sind und Querschnitte aufweisen, die in einen Kreis (C) eingeschrieben sind, der senkrecht zu der Achse (A) ist, wobei die Lamellen (21) jeweilige Seiten (24) aufweisen, die entlang des Kreises (C) angeordnet sind.

2. Einheit nach Anspruch 1, wobei die Lamellen (21) eine konstante Dicke und einen konstanten Querschnitt aufweisen.

3. Einheit nach einem der vorhergehenden Ansprüche, wobei der Kreis (C) seinen Mittelpunkt auf der Achse (A) aufweist.

4. Einheit nach einem der vorhergehenden Ansprüche, wobei die Lamellen jedes Paares von Lamellen (21a, 21b) voneinander beabstandet und durch jeweilige Durchgänge (25) getrennt sind, die mit dem Einlass (3) ausgerichtet sind; und die vorderen Lamellen (21a) von den hinteren Lamellen (21b) entlang der Ebene (P) beabstandet sind.

5. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die vorderen Lamellen (21a) einen gekrümmten Querschnitt aufweisen, der insbesondere als ein Bogen eines Kreises geformt ist, und

jeweilige konkave Flächen (22) aufweisen, die zu dem Einlass (3) hin gewandt sind.

6. Einheit nach Anspruch 5, wobei die konkaven Flächen (22) der vorderen Lamellen (21a) den gleichen Krümmungsradius und den gleichen Krümmungsmittelpunkt aufweisen und somit im Querschnitt zwei separate Abschnitte einer gekrümmten Linie definieren. 5
7. Einheit nach einem der vorhergehenden Ansprüche, wobei die hinteren Lamellen (21b) einen geradlinigen Querschnitt aufweisen und jeweilige gegenüberliegende bzw. entgegengesetzte flache Flächen (22, 23) aufweisen. 10
8. Einheit nach Anspruch 7, wobei die hinteren Lamellen (21b) zentral in der Kammer (6) zusammenlaufen und in Bezug auf einander und in Bezug auf die vorderen Lamellen (21a) geneigt sind. 15
9. Einheit nach einem der vorhergehenden Ansprüche, wobei die vorderen Lamellen (21a) und die hinteren Lamellen (21b) bogenförmig sind und jeweilige konkave Flächen (22), die jeweiligen gegenüberliegenden bzw. entgegengesetzten Wänden (5a, 5b) des Gehäuses (2) zugewandt sind, und jeweilige konvexe Flächen (23) aufweisen, die einander zugewandt sind. 20
10. Einheit nach einem der vorhergehenden Ansprüche, wobei die Deflektoranordnung (20) ein zentrales Element (35) umfasst, das entlang der Achse (A) positioniert ist und sich entlang der Achse (A) parallel zu den Lamellen (21) erstreckt. 25
11. Einheit nach Anspruch 10, wobei das zentrale Element (35) ein im Wesentlichen zylindrisches Element mit einem im Wesentlichen kreisförmigen Querschnitt ist. 30
12. Einheit nach einem der vorhergehenden Ansprüche, wobei die Lamellen (21) durch eine Stütze bzw. einen Träger (30) gestützt bzw. getragen sind, die bzw. der eine Basis (31) und einen Kopf (32) umfasst, die entlang der Achse (A) ausgerichtet und mit jeweiligen axial gegenüberliegenden bzw. entgegengesetzten Enden der Lamellen (21) verbunden sind, wobei der Träger (30) durch eine in dem Gehäuse (2) ausgebildete Wartungsöffnung (33) von dem Gehäuse (2) entfernbar ist. 35
13. Einheit nach Anspruch 12, wobei der Kopf (32) des Trägers (30) so geformt ist, dass er die Wartungsöffnung (33) verschließt, wenn die Deflektoranordnung (20) in dem Gehäuse (2) untergebracht ist; und mit Befestigungsgliedern (34) zum Koppeln mit dem Gehäuse (2) versehen ist. 40

Revendications

1. Unité de distribution (1), en particulier pour la distribution d'air dans des systèmes de ventilation, comprenant un carter en forme de boîte (2) présentant des parois (5) qui délimitent une chambre interne (6) ; le carter (2) présentant une entrée (3), formée dans une première paroi (5a) du carter (2), et une pluralité de sorties (4), formées dans une ou plusieurs deuxièmes parois (5b) du carter (2) ; dans laquelle l'unité (1) comprend un ensemble déflecteur (20) logé à l'intérieur du carter (2) dans la chambre (6) ; l'ensemble déflecteur (20) comprenant une pluralité d'ailettes (21) positionnées en face de l'entrée (3) et centralement dans la chambre (6) et agencées autour d'un axe central (A) et s'étendant parallèlement à l'axe (A) entre une paire de parois opposées (5) du carter (2) ; les ailettes étant agencées en paires d'ailettes (21a, 21b), les ailettes (21a, 21b) de chaque paire étant sensiblement alignées l'une sur l'autre en face de l'entrée (3) et positionnées de manière symétrique sur des côtés opposés d'un plan médian (P) contenant l'axe (A) et perpendiculaire à l'entrée (3) ; une première paire d'ailettes avant (21a) étant positionnée en face de l'entrée (3), et une deuxième paire d'ailettes arrière (21b) étant positionnée derrière les ailettes avant (21a) et plus loin de l'entrée (3) que les ailettes avant (21a) ; les ailettes avant (21a) étant formées de sorte à détourner un flux de fluide venant de l'entrée (3) au moins partiellement vers le plan (P) ; l'unité étant **caractérisée en ce que** les ailettes (21) sont positionnées dans une région centrale de la chambre (6) et présentent des sections transversales qui sont inscrites dans un cercle (C) qui est perpendiculaire à l'axe (A), les ailettes (21) présentant des côtés respectifs (24) agencés le long dudit cercle (C). 45
2. Unité selon la revendication 1, dans laquelle les ailettes (21) présentent une épaisseur constante et une section transversale constante. 50
3. Unité selon l'une des revendications précédentes, dans laquelle ledit cercle (C) présente son centre sur l'axe (A). 55
4. Unité selon l'une des revendications précédentes, dans laquelle les ailettes de chaque paire d'ailettes (21a, 21b) sont espacées les unes des autres et séparées par des passages respectifs (25) alignés sur l'entrée (3) ; et les ailettes avant (21a) sont espacées des ailettes arrière (21b) le long du plan (P).
5. Unité selon l'une des revendications précédentes, dans laquelle les ailettes avant (21a) présentent une section transversale incurvée, formée en particulier comme un arc de cercle, et présentent des faces concaves respectives (22) tournées vers l'entrée (3).

6. Unité selon la revendication 5, dans laquelle les faces concaves (22) des ailettes avant (21a) présentent le même rayon de courbure et le même centre de courbure et définissent ainsi, en section transversale, deux parties séparées d'une ligne incurvée. 5
7. Unité selon l'une des revendications précédentes, dans laquelle les ailettes arrière (21b) présentent une section transversale rectiligne et présentent des faces plates opposées respectives (22, 23) . 10
8. Unité selon la revendication 7, dans laquelle les ailettes arrière (21b) convergent centralement dans la chambre (6) et sont inclinées les unes par rapport aux autres et par rapport aux ailettes avant (21a). 15
9. Unité selon l'une des revendications précédentes, dans laquelle les ailettes avant (21a) et les ailettes arrière (21b) sont en forme d'arc et présentent des faces concaves respectives (22) tournées vers des parois opposées respectives (5a, 5b) du carter (2) et des faces convexes respectives (23) tournées les unes vers les autres. 20
10. Unité selon l'une des revendications précédentes, dans laquelle l'ensemble déflecteur (20) comprend un élément central (35), positionné le long de l'axe (A) et s'étendant le long de l'axe (A) parallèlement aux ailettes (21). 25
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11. Unité selon la revendication 10, dans laquelle l'élément central (35) est un élément sensiblement cylindrique présentant une section transversale sensiblement circulaire. 35
12. Unité selon l'une des revendications précédentes, dans laquelle les ailettes (21) sont supportées par un support (30) comprenant une base (31) et une tête (32) alignées le long de l'axe (A) et jointes aux extrémités opposées axialement respectives des ailettes (21), le support (30) étant retirable du carter (2) à travers une ouverture de service (33) formée dans le carter (2). 40
13. Unité selon la revendication 12, dans laquelle la tête (32) du support (30) est formée de sorte à fermer l'ouverture de service (33) lorsque l'ensemble déflecteur (20) est logé dans le carter (2) ; et est dotée d'éléments de fixation (34) pour le couplage avec le carter (2). 45
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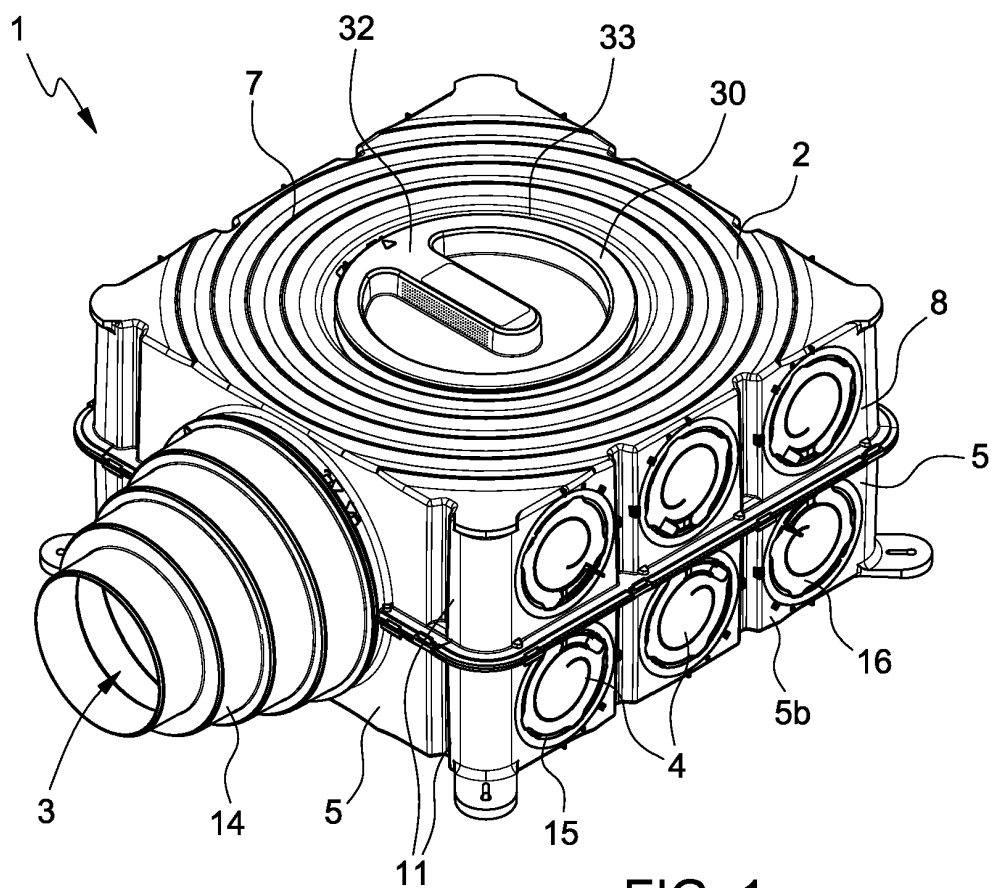


FIG. 1

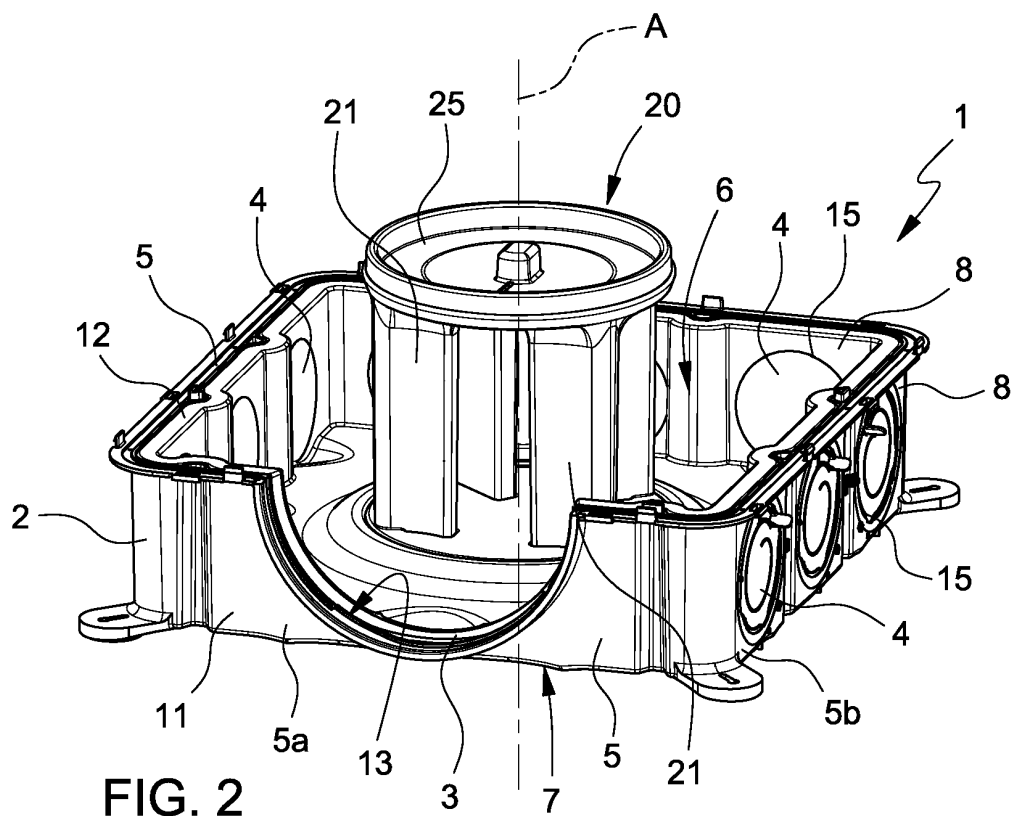
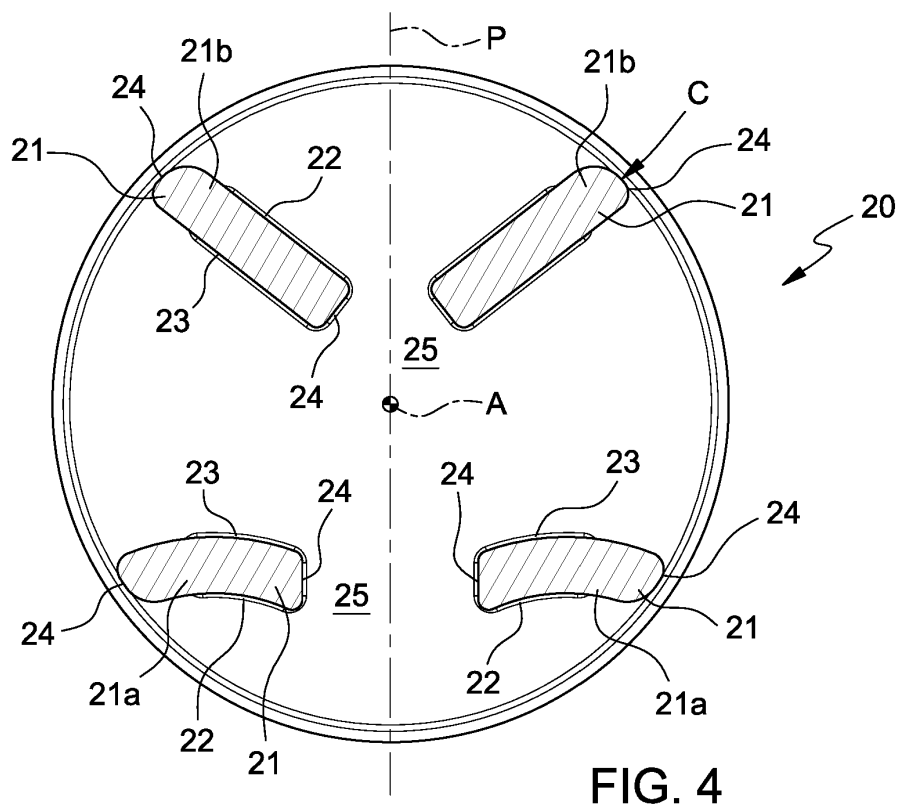
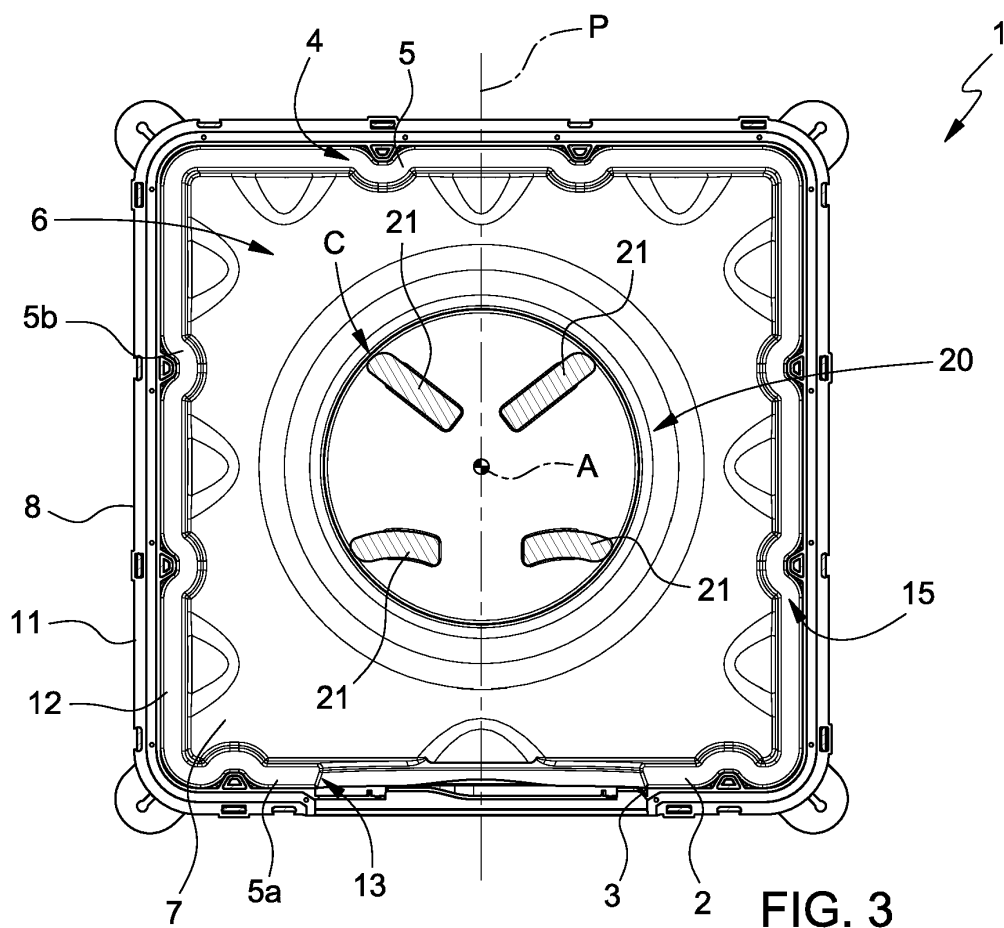


FIG. 2



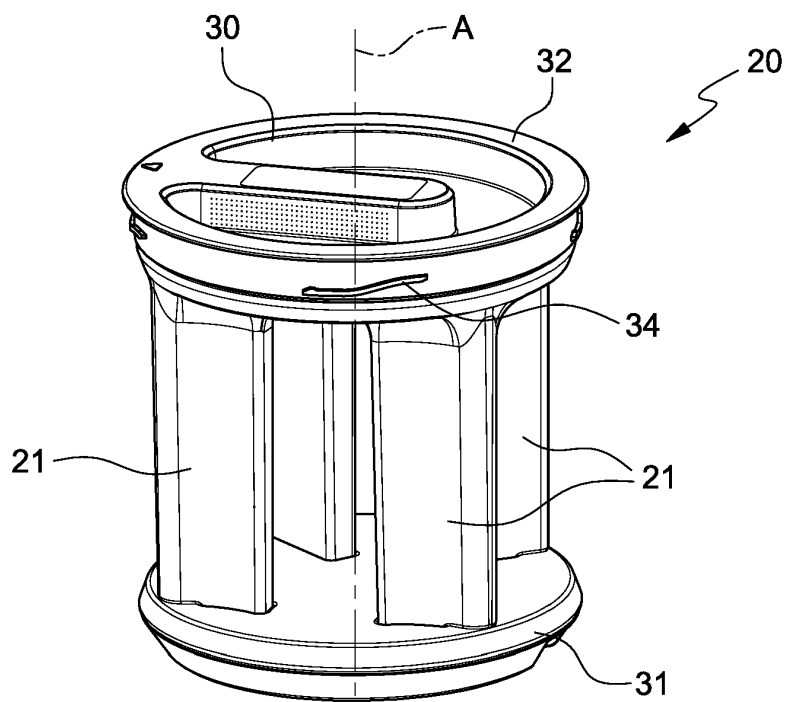


FIG. 5

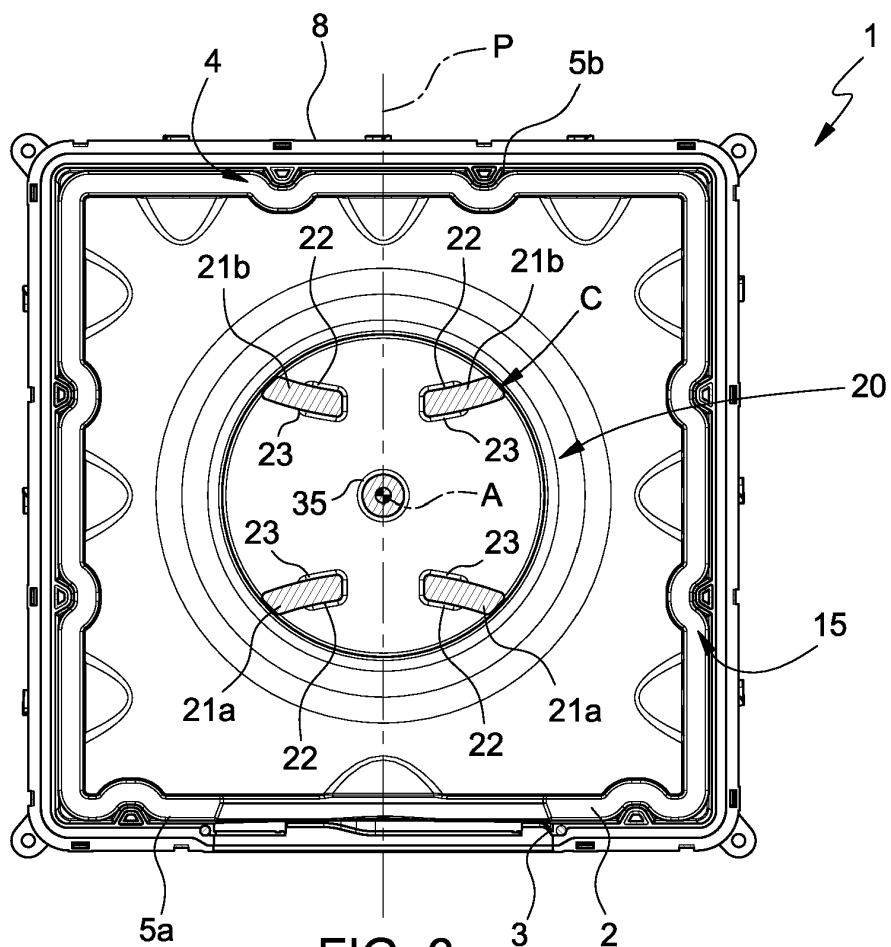


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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