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(54) **SLOT DIFFUSER**

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Description

TECHNICAL FIELD

[0001] The invention concerns an improvement in the field of air flow diffusers, specifically linear slot diffusers or 'lineaire spleetroosters' [in Dutch], and relates specifically to an improved slot diffuser for blowing air into a room. In addition, the invention concerns a method for manufacturing the improved slot diffuser, as well as for installing the slot diffuser and using the improved slot diffuser for blowing air into a room.

PRIOR ART

[0002] A problem with the known slot diffusers, as further discussed, is that these are built up from different part elements, so to speak slot by slot. This does allow some flexibility in construction (choice of number of slots is not fixed), but in practice this is not an advantage, since for building enterprises of some size this choice is already determined beforehand. Moreover, the construction of the current slot diffusers is so labour-intensive, and also requires specialised equipment, that these are already constructed beforehand anyway and directly purchased and ready for installation. The known slot diffusers consist of a number of separate dividing walls or side walls (which are typically extruded) between the ventilation slots, which have to be fixed to each other with spacer elem ents, which must be placed in the correct position (and in certain designs must subsequently be pressed) on the side walls in order so to mutually connect said walls. Since the side walls are produced separately, and subsequently need to be mounted onto each other (manually) to form a slot diffuser, this is a particularly labour-intensive step and/or will require the procurance of additional machines (for example for pressing).

[0003] However, a small mutual deviation on the spacer elements can result in an inferior slot diffuser, which can lead to problems upon installation. Furthermore, breakage of spacer elements can easily occur during the pressing step, or deformation in the rest of the slot diffuser, so rendering the whole product unsuitable. Moreover, this will result in the slot diffusers, as they are currently available, only being able to be of a limited length before undesired effects occur, such as bending upon installation.

[0004] A known slot diffuser is described, for example, in US 2012/052790, in which it is clear that the side walls (elements 204 in the figures) are held together by extra elements (206). This results in a higher production cost for the abovementioned reasons and moreover also results in a less reliable slot diffuser, since deviations or damage is much likelier. Other known slot diffusers are discussed in inter alia US 5194042, US 5788572 and US 6648752, but none met the desired requirements, to wit simpler production (both faster and cheaper) but also high values with respect to strength.

[0005] Many known slot diffusers further provide deflectors in each room which from a central point in the room (or centrally at the back of the room) are pivotally fixed, and so are either in an open or closed state, in that regard allowing or not allowing air flow through the slot diffuser. An example hereof is described in US 2012/052790 or US 5,194,042. In order to allow such placement of said deflectors, an additional element, a deflector holder, must be provided that is adapted to hold said deflectors in a manner that allows rotation. Said element must moreover be present at regular intervals in the chambers of the slot diffuser along the length so as to ensure a robust anchoring of said deflectors, since said deflectors are often manipulated and so for that reason must be safely fixed. This requires a large number of complex elements per ventilation opening of the slot diffusers, however, which elements would be expensive but moreover would also block a large part of the available surface area to air flow. This results in an at least proportionally larger energy cost for the generation of the desired air flow rate, while it should moreover be noted that such elements often also lead to undesired swirling in the air flows that further reduces the energy efficiency, considering the large amounts of said deflector holders that would need to be provided.

[0006] Further relevant documents are DE 102012018640, KR 100870409, US 3185068, US 3308743, US 3327608, GB 1514459, US 2012/052790 and US 3412669. Each of these documents have shortcomings, however, with respect to one or more of the aforementioned points.

[0007] The current invention seeks to find a solution for at least some of the abovementioned problems. It is the intention to produce continuous slot diffuser structures in a more limited number of actions, that so doing can also be manufactured stronger and longer, the air flow moreover being guaranteed by providing specifically developed deflector holders or holding-down organs that further contribute to the structural strength of the slot diffuser.

SUMMARY OF THE INVENTION

[0008] The invention concerns in a first aspect an improved slot diffuser according to claim 1 for blowing air into a room.

[0009] In a second aspect, the invention concerns a method for manufacturing a slot diffuser for blowing air into a room according to claim 13.

[0010] The applicant observed in this regard that the punching out of the cut-outs is further preferable with regard to efficiency.

[0011] The invention concerns in a third aspect a slot diffuser for blowing air into a room. Said slot diffuser comprises an elongated, essentially beam-shaped frame, said frame comprising a front and a mainly open rear side, and said frame further comprising one or more elongated chambers, extending essentially parallel with re-

spect to each other along the longitudinal axis of said frame and being delimited by said front and said rear side and two side walls, each of the chambers comprising a ventilation slot in the front, said ventilation slot extending along the longitudinal axis of said frame. Said slot diffuser further comprises one or more elongated deflectors, preferably two deflectors per ventilation slot, essentially of the same length as the ventilation slots, said deflectors being fixed to said side walls of the chambers, pivotally around the longitudinal axis of said frame, and said deflectors being adapted, in a first position, to substantially prevent air flow through the chambers, and, in a second position, to allow the flow of air through the chambers. Finally, said slot diffuser comprises one or more holding-down organs, enclosed in one or more of the chambers, and the holding-down organs being adapted for the retention of said deflectors in the first position.

[0012] In a fourth aspect, the invention concerns a holding-down organ for positioning one or more deflectors in a slot diffuser and suitable to be clamped in an elongated ventilation chamber of a slot diffuser. For this, the holding-down organ comprises a central portion with one or more connectors provided at lateral, opposite extremities of the central portion. The connectors comprise a groove, inwards with respect to the holding-down organ, oriented along a lateral axis of the holding-down organ, the groove extending along a longitudinal axis and being suitable for receiving a projecting snap-fit connector. The central portion is substantially hollow and has one or more openings substantially perpendicular to the longitudinal axis and the lateral axis, the openings being suitable for receiving an attachment means through them for fastening the holding-down organ to an upper-lying structure.

[0013] Preferably this concerns a slot diffuser according to an embodiment of the invention.

DESCRIPTION OF THE FIGURES

[0014]

Fig. 1 shows an isometric view of an embodiment of a slot diffuser according to the invention.

Fig. 2A-B show a holding-down organ of a slot diffuser according to an embodiment of the invention, Fig. 2B rendering the inner side of the holding-down organ.

Fig. 3 shows an alternative embodiment of the holding-down organ according to the invention.

Fig. 4-5 show views along the longitudinal axis of a slot diffuser according to an embodiment of the invention, Fig. 4 also including an element for plenum attachment to which said slot diffuser is fastened.

Fig. 6A-F show views along the longitudinal axis of possible embodiments of a slot diffuser according to the invention.

Fig. 7 shows an enlarged view of a slot diffuser according to an embodiment of the invention along the longitudinal axis.

DETAILED DESCRIPTION

[0015] The invention concerns an improved slot diffuser for blowing air into a room, comprising a flat front, the front comprising at least two longitudinally parallel extending slats spaced apart over a predetermined distance from each other, between which ventilation slots are formed, and a side wall extending substantially perpendicular from each of said slats at the front and extending along the longitudinal axis of said slats, the longitudinal extremities of said side walls all being connected with (longitudinal extremities of) said abutting side walls via end bridges on said side walls at said rear side of said slot diffuser and said end bridges and said side walls and said slats consisting of one piece, said end bridges extending between said abutting side walls near the distal extremities of said side walls with respect to said slats. Optionally, said abutting side walls are further connected via centre bridges, said centre bridges and said side walls consisting of one piece and said centre bridges extending between said abutting side walls near the distal extremities of said side walls with respect to said slats.

[0016] Said slot diffuser comprises in this regard an elongated, substantially beam-shaped frame with a flat front and a rear side, substantially parallel to the front. Abutting side walls define a chamber in between said abutting side walls.

[0017] According to the invention, abutting side walls are only connected at said rear side of said frame via said end bridges (and optionally centre bridges), which provides advantages in production (frame is single), but also upon use, by a more efficient air flow (no spacers needed).

[0018] Said slot diffuser is in that regard further provided with one or more holding-down organs in one or more of the chambers, said holding-down organs being adapted to anchor themselves to both said side walls of the chamber, the holding-down organ in that regard extending at least to a central zone of both said side walls of the chamber. Said holding-down organs further contribute to the sturdiness of said slot diffuser structure (lateral forces), and also function as 'stop' for said deflectors. Since the holding-down organs extend to a central zone of said side walls, more strength is moreover provided to said slot diffuser to accommodate forces here that could normally cause a moment of force on a structure that is only connected at one extremity.

[0019] In a possible embodiment, the holding-down organs clamp themselves fixedly on side walls at said rear side of said slot diffuser. In this regard, the holding-down

organ extends at both side walls up to a central zone of said side walls. Alternatively (or complementarily), the holding-down organs clamp themselves fixedly on a central zone of said side walls.

[0020] In contrast to existing systems, as for example GB 1514459 A, the applicant observed that it is more advantageous to attach said side walls at said rear side of said slot diffuser to each other, since the air also enters said slot diffuser there and is further conducted through (to beyond the ventilation slot). By allowing the constriction to occur immediately at the ingression of the air, the created air flow is less turbulent upon leaving said slot diffuser, since a part of the turbulences is already filtered out in said slot diffuser itself. In GB 1514459 A, the constriction does not occur until a central point, thus causing the emission of a turbulent air flow from said slot diffuser.

[0021] Notice that in first instance there is a matter of two or more slats (and thus one or more ventilation slots). The choice of a certain number of slats depends on the situation, size and positioning of the plenum in which said slot diffuser is typically fixed into. Nevertheless, the advantages of the invention are applicable, regardless of the number of slats and ventilation slots. Said slot diffusers can comprise 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or more ventilation slots, and substantially consist of a single piece (with some additional elements of less structural importance, as end pieces, and said deflectors itself). The applicant observed that the current slot diffusers were always modularly built up from elements comprising a slat with a side wall, as discussed in the invention. These were connected after production (typically extrusion) via spacer elements connecting the separate slat-wall pieces and holding them at a fixed distance. The desired number of ventilation slots were so obtained by adding further slat-wall pieces and holding them in place via spacer elements (see the figures also). In this regard, it should be remarked that this process causes a much lower production rate by the large number of steps that moreover partly need to be carried out manually or requires heavily specialised equipment to be carried out automatically. On the other hand, the applicant observed that by the placement of the spacer elements (that must be placed at regular distances to obtain reliable connections for the old type of slot diffuser), the 'open' structure of said slot diffuser is partly reduced and a part of the air passage through said slot diffuser is obstructed. This results firstly in undesired air flow effects (swirling, unexpected flows), but secondly and more importantly, for a higher energy cost in order to generate a desired flow rate. Since ventilation systems keep working seemingly constantly throughout the day, this can lead to an enormous additional cost. The applicant observed that by using the spacer elements, old designs of slot diffusers have at least 7.5% less free flow-through surface area, and to compensate this at least 8% more energy shall have to be used to provide the desired flow rate, apart from the side effects of the interrupted structure of the free flow-through surface area that typically result in a further reduced efficiency.

[0022] For those reasons, the applicant designed a type of slot diffuser that (substantially) consisted of one piece (at any rate where said slats and side walls could be produced in one piece and remain as one piece), said slats at said rear side only being connected to the longitudinal extremities. This somewhat ensures the necessary anchoring and shape retention of said slot diffuser, without extra spacer elements having to be added to create said slot diffuser.

[0023] Further, the use of spacer elements entails additional problems. Since a large number of connections via spacer elements are needed to connect two slat-wall pieces, these must therefore be very accurately produced in order to guarantee the same intermediate distance perfectly. Deviations on the spacer elements have major consequences, such as inter alia deformation of said slot diffuser (and/or plenum), badly fitting slot diffusers, undesired air flow effects (noise), reduced efficiency and/or increased energy cost. By opting for a single structure, this connection is automatically as desired, and a perfectly dimensioned slot diffuser is produced. As mentioned previously, the use of spacer elements also results in a much more complex manner of assembling said slot diffusers, which delays the production process and makes it more expensive. The spacer elements must be place manually at a specific position that is dependent on of the type rooster and the number of slots.

[0024] In a further disadvantage, the pressing of the spacer elements and the slat-wall pieces also results in much loss by deformation, and there is a restriction to the length of said slot diffusers that can be produced in this manner. For larger desired lengths, the different pieces need to be connected via so-called 'butt plates' joining the extremities of the separate pieces together. These however entail a further problem, such as bending and alignment problems between successive pieces of slot diffuser. In addition, this of course also hampers the installation process, which needs to be carried out in more intermediate steps.

[0025] For this and still further reasons, the applicant proposes an adapted slot diffuser in which spacer elements are no longer necessary, since said slats and side walls are already mutually connected and consist of a single piece (except for possible additional elements which, however, are not necessary for the connection of said slats and side walls). The various slats are so held at a correct distance as a matter of course. Additional reinforcements can then be added as desired or needed (as further discussed).

[0026] In general it should be observed that said deflectors are positioned and dimensioned such that, if they are in an open position, the opening of the ventilation slot allowed hereby at the front of said slot diffuser has an area that is smaller than the opening at said rear side of said slot diffuser. In that regard, the same condition also applies as when only one of said deflectors is in an open state. This condition is crucial, since this ensures that the

air flow through the ventilation slot is stable, since a constriction occurs for the air flow. A broadening would result in a pressure drop that causes eddying currents (and thus energy loss as well as a reduced comfort for persons in the room the air flows into). Since the improved design of said slot diffuser according to the invention results in a larger opening at said rear side of said slot diffuser, the opening at the front can also be made larger (by allowing said deflectors to further recede from each other for example, or by the improved positioning and/or dimensioning hereof). This ultimately leads to a strongly improved air flow and so to a much higher efficiency than in known systems.

[0027] According to the invention, said side walls on each side abutting another side wall comprise a pivot groove, running along the longitudinal axis of said side wall, said pivot groove being adapted for pivotally holding a deflector. In this regard, it should be kept in mind that said deflectors are pivotable around the longitudinal axis of said slot diffuser.

[0028] Preferably said pivot groove is approximately cylinder-shaped, the mantle of the cylinder comprising a longitudinally running opening. Said pivot groove is in that sense suitable for receiving an also cylinder-shaped, thickened pivot edge of a deflector, said deflector extending from said pivot groove via the longitudinally running opening thereof. Said opening is sufficiently wide to allow said deflector to pivot.

[0029] In this regard, it should further also be observed that the holding-down organs extend up to the central zone where said pivot groove is disposed, and thus also where the pivot edge of said deflector is disposed. The applicant provides in this regard somewhat flexible closing components (for example a lip or arm, see also the figures) on the holding-down organ near the central zone, said flexible closing component enclosing the pivot edge in said pivot groove. The flexibility of the closing component still allows said deflectors to pivot on the one hand, but does provide sufficient force to keep the pivot edge fixed in said pivot groove, and so to anchor said deflector on the pivot axis (the pivot edge).

[0030] From that point of view, the applicant therefore proposes thinner trailing ends (either parallel to and longitudinal along said rear side of said slot diffuser or perpendicular thereto and longitudinal therewith) as closing components, which, dependent upon an appropriate choice of material (see also further in the text), can provide the necessary flexibility and durability.

[0031] Since the slots or holders run longitudinally along said side walls, this is particularly simple to apply in said slot diffusers according to the invention, for example via extrusion. Since the slots or holders moreover also form part of said slot diffuser itself, no additional elements need to be provided (as for example in US 2012/052790) that lead to additional complexity, both in production and upon installation.

[0032] According to the invention, said slot diffuser further comprises one or more, preferably two, longitudinal deflectors, preferably comprising plastic, per ventilation slot, substantially just as long as the ventilation slot, said deflectors comprising a pivot edge on one longitudinal side, and the pivot edge being adapted to be pivotally held in said pivot groove around the pivot edge. Preferably the pivot edge is thickened with respect to the rest of said deflector. In this way, it is simpler to dispose said deflector in said pivot groove with the pivot edge, where it can be clicked fast, for example, in said pivot groove. In this regard, the holding-down organs attached in said slot diffuser are adapted to fix the pivot edge in said pivot groove.

[0033] Said deflectors are generally components having a length that is substantially equal to the length of the ventilation slots and wide enough for said deflectors to be able to close off the ventilation slot. Moreover, when using two deflectors per ventilation slot, one can opt for a directed air flow by, for example, bringing one of said deflectors in an open position and the other in a closed position.

[0034] According to the invention, the holding-down organ is adapted to partly close off said pivot grooves over the longitudinal axis thereof for enclosing the pivot edge of said deflectors, preferably where the holding-down organ specifically comprises one or more closing components for partially closing off said pivot grooves, and the closing components with further preference forming an additional limitation for pivoting said deflectors to the first position.

[0035] According to the invention, the holding-down organ is adapted to partly close off said pivot grooves along the longitudinal axis for enclosing the pivot edge of said deflectors, the holding-down organ comprising on either side a closing component suitable for enclosing the pivot edge of said deflectors in said pivot groove, the closing components exhibiting limited flexibility or play with respect to the holding-down organ to pivotally enclose said deflectors, the closing components preferably being narrow trailing ends of the holding-down organ.

[0036] According to the invention, the holding-down organ comprises on either side a closing component which is suitable for partly closing off said pivot groove across the longitudinal axis, the closing components exhibiting limited flexibility or play with respect to the holding-down organ, the closing components preferably being narrow trailing ends of the holding-down organ.

[0037] In a still further preferred embodiment, said deflectors have a curved profile that is constant across the longitudinal axis of said deflectors, and said deflectors are pivotable between a first closed position and a second open position, the ventilation slot being closed when the two deflectors of the ventilation slot are in a closed position. At the least, said deflectors are curved at opposite edge the with respect to the pivot edge (thus curved around a longitudinal axis of said deflector) in order to so minimalise air resistance.

[0038] In a preferred embodiment, the outer side walls are adapted to be fastened in a plenum, preferably where

the outer side walls have a snap-fit component and can be fastened in the plenum via the snap-fit component.

[0039] Such a connection system is highly suitable for simplifying the installation in a plenum. In this way, said slot diffuser can be temporarily mounted in the plenum via the snap-fit connection and subsequently fastened via more reliable means. In current systems, a person skilled in the art must hold said slot diffuser in the plenum, and meanwhile apply fastening means such as screws and fasten them to definitively attach said slot diffuser. In the current embodiment, the person skilled in the art has his hands free to secure the fastening, since the snap-fit connection is strong enough to temporarily hold said slot diffuser. In practice, the plenum will have an adapted snap-fit component in order to couple with the snap-fit component of said slot diffuser (typically male-female connectors that are clicked fast as it were). In this case, the snap-fit component of said slot diffuser will be strongly rigid (preferably steel, for example galvanised steel or spring steel; possibly aluminium), and for that reason the snap-fit component of the plenum will be better deformable in order so to be able to couple. In a possible embodiment, the plenum has on the inner side on both longitudinal sides a male snap-fit component (connector) that protrudes with a T-shaped profile, and said slot diffuser has a female snap-fit component (connector) with a T-shaped cut suitable for receiving the male snap-fit component of the plenum. Notice that the snap-fit components of said slot diffuser do not necessarily need to run along the whole length of said slot diffuser, although this is indeed preferably the case, since this simplifies extrusion. The same applies for the snap-fit components of the plenum itself, although this is typically not produced via extrusion.

[0040] In a preferred embodiment, said slot diffuser comprises a rear side parallel to the front, and said rear side being substantially open in between said side walls, said side walls being mutually connected via said end bridges, and at predetermined distances via centre bridges, said centre bridges and said side walls consisting of one piece and said centre bridges extending between said abutting side walls near the distal extremities of said side walls with respect to said slats.

[0041] This extension describes more precisely what the preferred structure is of said slot diffuser at said rear side. From here, an air flow for ventilation is supplied to the front (through the ventilation slots, whether or not - partly - closed off by deflectors), and so to the desired chamber. By having a rear side that is as open as possible, that nevertheless is connected to said slats at the front and said side walls, an optimal air flow is guaranteed (thus at minimal energy cost). Preferably only at the longitudinal extremities narrow end bridges are provided that mutually connect said side walls and hold them together, and optionally between said end bridges in one or more centre bridges (for reinforcement of longer slot diffusers). Optionally a narrow edge can further extend from said side walls at said rear side, along a very limited distance (a few mm). This possibly allows additional elements to be clamped fast to said slot diffuser.

[0042] As mentioned, this aspect clashes strongly with the known slot diffusers, in which said side walls are mutually only connected with the aid of additional spacer elements. Since said additional spacer elements are artificially added to the structure of said slot diffuser (whilst said end bridges of the invention are an extension of the material of said side walls/slats), these must also be placed at (very precise) fixed distances in order to ensure a constant spacing between said slats, as well as providing sufficient sturdiness to said slot diffuser. In addition, the spacer elements also add many extra costs upon production, for example in man hours and/or equipment, since the spacer elements must either be mounted very accurately or be automated with a machine designed for that purpose; and after which said slot diffuser assembled in this way must subsequently still be pressed to effectively anchor the spacer elements with said side walls. In that regard, it should be noted that, in this pressing step for the known slot diffusers, breakage of the end products often occurs and so there is quite an amount of losses through spoils in this phase. One of the advantages of the invention is therefore that this pressing step is made redundant and that the losses thereby do not occur. In other known elaborations of slot diffusers, no pressing step is carried out but other connection elements are used to attach said side walls to each other in other ways, which again results in an extra mechanical step that is labour and material intensive and can lead to breakage.

[0043] In a preferred embodiment, said slot diffuser at the longitudinal extremities of said slats and said side walls is provided with a detachable end piece or end cap in order to work said slot diffuser into a frame, but also serves for mutual connection of the longitudinal extremities of said side walls. The end piece or end cap comprises a profile piece that connects to the surface of said slats and further extends along a predetermined distance thereof, and preferably the end piece or end cap is detachably fastened to said slot diffuser on said side walls.

[0044] By (typically at both extremities) providing an end piece or end cap, an extra reinforcement is created between said slats, and the danger of deformation is much lower. In this regard, it should be noted that the forces exerted on an installed slot diffuser are reasonably limited. In particular it is possible, via the end pieces or end caps, to create additional (indirect) connections between said side walls, where said additional connections can be placed closer to said slats than said end bridges (and/or centre bridges), and provide said slot diffuser with more sturdiness at the front. In a possible embodiment, said side walls (on an inner side, thus abutting another side wall) can have an additional slot or groove (or more) along the longitudinal axis in which a screw (or another attachment means) can be screwed into in order to attach the end pieces or end caps. In general said end pieces, however, serve to work said slot diffuser uniformly into

an already present frame.

[0045] In a preferred embodiment, said side walls stand at a mutual distance between 20 mm and 45 mm, preferably between 25 mm and 40 mm, with further preference approximately 34 mm, the ventilation slots having a width between 15 and 35 mm, preferably between 20 and 30 mm, and with further preference approximately 25 mm. Said slats can in this regard have a width between 10 mm and 25 mm, but are typically between 15 mm and 21 mm, preferably 18 to 20 mm (notice that the outer slats are typically somewhat wider than said slats of side walls within said slot diffuser). As there are standardised dimensions in most situations, certainly with respect to distance between said side walls, plenums often also have standard dimensions and are adapted to be able to receive slot diffusers with a certain number of ventilation slots. Naturally it should be presumed in this regard that in specific situations said slot diffusers can be very simply adapted with respect to width by adapting the production process in a very limited way, this in contrast to the prior art slot diffusers, where new spacer elements must be made (new moulds and such needed).

[0046] In a preferred embodiment, said side walls and slats have a uniform wall thickness. This makes said slot diffuser highly suitable to be produced at high speeds, for example by extrusion, specifically precision extrusion. In a further preferred embodiment, said slot diffuser would have a symmetrical mass distribution between the front and rear side if said rear side between said end bridges were completely closed with the material of said slot diffuser (thus continuous presence between said end bridges), which would make the design highly suitable for manufacturing via precision extrusion. Afterwards cut-outs could subsequently be made at said rear side to retain only said end bridges (and any centre bridges) and to obtain the desired open structure on said rear side.

[0047] In a preferred embodiment, said slats and said side walls comprise aluminium. This can concern both so-called hard aluminium and soft aluminium. Besides aluminium several kinds of material are possible, such as steel for example, although this is more difficult to process. The applicant observed, however, that aluminium is to be preferred since this is easy to process (for example extrusion, punching, milling, ...), is sufficiently light (and thus easy to be held in a plenum without too many fastening means), cheap and sufficiently strong to avoid deformation.

[0048] In a preferred embodiment, the holding-down organs along the longitudinal axis are provided in the chamber at equidistant positions with respect to each other, the holding-down organs attached in said slot diffuser having a width along the longitudinal axis of said slot diffuser of maximally 4 cm (for example 3.9 cm, 3.8 cm, 3.7 cm, 3.6 cm, 3.5 cm, 3.4 cm, 3.3 cm, 3.2 cm, 3.1 cm), preferably maximally 3 cm. With still further preference the width is further limited, for example to 2.9 cm, 2.8 cm, 2.7 cm, 2.6 cm, 2.5 cm, 2.4 cm, 2.3 cm, 2.2 cm, 2.1 cm, 2 cm or less. Notice that intermediate values are by no means excluded. By limiting the width of the holding-down organs, the influence on the air flow through said slot diffuser is also limited as much possible.

[0049] In a preferred embodiment, the holding-down organs comprise plastic. Typical examples hereof are polypropylene (high and/or low density), polyethylene (high and/or low density), polyester, but others can also be used. Preferably, the holding-down organs comprise polyoxymethylene (POM) or polyacetal. This thermoplastic is particularly suitable for this application due to its high strength and structural stiffness, low friction with other materials (slot diffuser itself) and exhibiting little creep.

[0050] In a preferred embodiment, the holding-down organs are slidably attached in said slot diffuser along the longitudinal axis of said slot diffuser along a distance of minimally 2% of the length of said slot diffuser. This allows a certain degree of manoeuvrability of the holding-down organs in said slot diffuser, which can be especially opportune if the holding-down organs are additionally also used for the fastening of said slot diffuser to a ceiling, for example in a plenum or frame, since the holding-down organs can so be simply aligned with corresponding connectors on the ceiling. Preferably the holding-down organs are mounted with intermediate distances between 150 mm and 700 mm, preferably between 200 mm and 600 mm, with further preference between 250 mm and 500 mm, as for example 275 mm, 300 mm, 325 mm, 350 mm, 375 mm, 400 mm, 425 mm, 450 mm, 475 mm.

[0051] In a preferred embodiment, the holding-down organs attached in said slot diffuser are adapted to be fixed, preferably detachably, to or in an upper-lying structure on said rear side of said slot diffuser via one or more fastening means, the holding-down organs preferably being adapted to be fixed, via an attachment means provided with a screw thread (for example screw) to or in the upper-lying structure and the holding-down organs having one or more openings perpendicular to said rear side of said slot diffuser through the holding-down organs for fastening with the attachment means. As mentioned, the holding-down organ has in this regard the additional functionality of being used for installing said slot diffuser. Moreover, if the holding-down organs are (somewhat) movable along the longitudinal axis as mentioned previously, this can be quite useful upon installation in aligning the holding-down organs perfectly with the connectors on the ceiling.

[0052] In a further preferred embodiment, the holding-down organ is adapted to partly close off said pivot grooves along the longitudinal axis for including the pivot edge of said deflectors. The proposed embodiment makes it possible in first instance to simply place said deflectors in said slot diffuser, with the thickened pivot edge in said pivot grooves, such that the placing of the holding-down organs fastens said pivot edge in said pivot groove (pivoting indeed still being allowed over a certain angle). This serves as an additional safeguard that said deflectors are sufficiently fixed. Preferably the holding-

down organ comprises one or more closing components for the partly closing off of said pivot grooves across the longitudinal axis, the closing components with further preference forming an additional limitation for pivoting said deflectors to the first position and not further away from the second position. By dimensioning also the closing components such that they reflect the first or closed position of said deflectors (and preventing further pivoting of said deflectors once the first position is reached), this also serves as an additional assurance that the desired position is reached. Notice that in principle the holding-down organ thus does not require a solid central portion to keep said deflectors in first position, and can simply use the closing components for this purpose. In principle, the central portion can be made substantially hollow with a surface area as limited as possible that can obstruct air flow through the ventilation slots. A possible embodiment hereof would be a beam-shaped element with two opposite walls removed, which allows a good air flow whilst retaining the structural strength of the holding-down organ. Alternatively, a beam-shaped skeleton structure can also be used, which would also allow a good air flow. Notice that the term 'beam-shaped' mainly refers to the fact that the connection between said side walls would normally be done with an essentially rectangular element as base. The height of the beam-shaped structure can in that regard be very limited and is then mainly intended for sturdiness.

[0053] In a possible embodiment, a holding-down organ can be chosen in which both the central portion and the closing components allow said deflectors to be placed correctly in the first position. Thus the closing components can be mounted to first prevent pivoting to the first position, the central portion being disposed to prevent a possibly forced 'over-pivoting' (said deflectors possibly being able to overcome the resistance of the closing components by application of sufficient force) in order so to avoid breakage of the closing components. Notice also that using the closing components in this way could prevent a rattling noise. After all, small vibrations on said deflector with respect to the holding-down organ can cause continuous clashes, and so cause undesired sounds. The closing components provide a buffer such that said deflectors in first position no longer rest against the central portion, and also no longer contact the central portion in the event of small vibrations or movements. This too was a problem with the known systems.

[0054] In a preferred embodiment, said rear side of said slot diffuser is open for at least 75%, preferably at least 80% open. A larger open surface area leads to a larger air flow, and moreover less turbulence in the air flow.

[0055] In a preferred embodiment, the holding-down organ comprises a central portion with one or more connectors provided at lateral, opposite extremities of the central portion, the connectors comprising a groove, inwards with respect to the holding-down organ, oriented along a lateral axis of the holding-down organ, the groove extending along a longitudinal axis and being suitable for receiving a projecting snap-fit connector, the central portion being substantially hollow, the central portion optionally having one or more openings substantially perpendicular to the longitudinal axis and the lateral axis and being suitable to receive an attachment means through the same for fastening the holding-down organ to an upper-lying structure.

[0056] In a preferred embodiment, the most laterally positioned slats extend laterally lengthwise, away from the other slats. This adaptation of the design allows said slot diffusers to be simply mounted in a plenum, by somewhat widening said slats on the lateral sides (on either side of the longitudinal axis) of said slot diffuser.

[0057] The invention concerns an improved method for manufacturing a substantially elongated slot diffuser for blowing air into a chamber according to claim 13.

[0058] Notice that, instead of punching or milling out, other techniques can also be used, such as water jet cutting, laser cutting and others, or even a combination. The applicant observed, however, that punching or milling out seemed to be practical in a number of areas. With milling out, the focus was specifically on CNC (computer numerical control) milling and/or multi-spindle milling. CNC milling has the advantage of being quite flexible, for example, but is more limited with respect to capacity in cutting. Multi-spindle milling can process large volumes faster but results in excessive heat development that must be counteracted (for example by immersion in a solution). Moreover, both techniques can be applied to structures with little wall thickness without deforming the structure (by heat development inter alia), which also applies for water jet cutting.

[0059] Most of the advantages of this improved method were already discussed extensively above. Thus the design of the improved slot diffuser ensures that it can be manufactured in a strongly simplified manner, and also at increased speed, which leads to high savings in production costs (labour hours, investments in equipment, ...) and so will reduce the consumer price considerably. Since said slot diffuser can be completed almost wholly in a single processing step (extrusion), the labour-intensive step of assembly of the old slot diffusers is no longer necessary. While the prior art slot diffusers still needed to be put together according to the number of desired ventilation slots, said slot diffusers can now be manufactured substantially completed via extrusion. In prior art slot diffusers, said slot diffuser consisted of separate parts (each consisting of a slat and side wall as in the current embodiment), that subsequently had to be fixed to each other via several spacers (manually or automated, both with disadvantages already discussed), associated with a pressing step (causing spoils). Moreover, this leads to a greater uniformity in the dimensioning of said slot diffusers of the invention, since these are all extruded from the same mould and the subsequent steps have limited (no) influence on the general appearance.

[0060] A second advantage is that, by providing a sin-

gle slot diffuser instead of an assembled one, slot diffusers of greater length can be manufactured and installed, which simplifies installation considerably, inter alia because no coupling pieces (butt plates) need to be placed to connect successive slot diffusers. The applicant observed in this regard that it is possible to produce slot diffusers having a length of several meters (2 m, 4 m, 6 m, 8 m, 10 m or even more) and to install them without compromising the quality or without other problems arising. For the current known slot diffusers, a length of 2 m is already problematic with respect to bending and alignment problems upon installation.

[0061] Notice moreover that the removed material of the cut-outs is preferably re-used for further slot diffusers.

[0062] In that which follows, the invention is described on the basis of non-limiting examples that illustrate the invention, and which are not intended to limit, or may not be interpreted as lim iting, the scope of the invention which is defined by the appending claims.

EXAMPLES

EXAMPLE 1:

[0063] Fig. 1, Fig. 4, Fig. 5 and Fig. 7 show a slot diffuser (1) according to the invention (with mutually small differences), or a part thereof (since this can extend further than now shown), seen from above (looking to the rear side (4)). Said slot diffuser of the figure has two ventilation slots (8) and three side walls (2) ending in three flat slats (3) at the front (5) of said slot diffuser, between which the two ventilation slots (8) lie. In this regard, the interconnection between the different side walls (2) via said end bridges (9) and said centre bridges (10) is also clearly visible. Notice that said connections are preformed and form a single structure with said side walls (2), and are not artificial connections that need to be added after the extrusion of side walls (2). Said end bridges (9) and centre bridges (10) can be placed at fixed mutual distances from each other to ensure a uniform sturdiness. Notice that in this case said centre bridges (10) and end bridges (9) are repeatedly paired (thus run from one side wall (2) to the other in line with each other), but this is by no means possible. The applicant observed, however, that this does lead to a sturdier structure and is also simpler with respect to production steps. In the figure, a number of important parts are also clearly visible. In first instance, the open structure of said rear side (4) of said slot diffuser must be pointed out. In known forms of said slot diffuser, the necessity of an open rear side (4) is precisely the reason that said side walls (2) are actually produced separately and are only later connected via spacers, the spacers then nullifying a piece of the openness, which is not the case in a slot diffuser according to the invention. In the embodiment of Fig. 1, said rear side (4) of said slot diffuser is approximately flat between the two outer side walls (2), and between each of said side walls (2) cut-outs (14) have been made in said rear side (4), whereby only a limited number of end and centre bridges (10) remain. Preferably, the cut-outs (14) do not completely reach from one side wall (2) to the other and a protruding clamping edge (11) thereof is left at said side walls (2) (going from 1 mm to 5 mm, for example 2, 3 or 4 mm).

[0064] Said deflectors (6) comprise a thickened pivot edge (19), with which they are partly enclosed in slots (in a rotating manner around the pivot edge (19)) in said side walls (2) (on both sides thereof) running along the longitudinal axis of said slot diffuser. The form of the slots or holders in said side walls (2) can be freely adapted, for example to enclose or not enclose said pivot edges (19) in a manner to render lateral movement impossible (and thus only able to be inserted or removed longitudinally by sliding them in the slots). Said deflector (6) can be fixedly enclosed by allowing said pivot groove to clasp the pivot edge (19) sufficiently far so that the pivot edge (19) is too wide to be able to emerge here from other than by sliding said deflector (6) out along the longitudinal axis. Alternatively said pivot groove can, however, also sooner form a grip, and extra elements can then be used to retain said deflectors (6) (specifically their pivot edges (19)) in place. An example of such an element, a holding-down organ (15), is visible in Fig. 1, and can also have further applications, for example for fastening in a plenum, via plenum attachments (17) and fastening elements (16).

[0065] As discussed previously, said deflectors (6) are partly curved (undulating) and of a width that allows the ventilation slot (8) to be fully covered. Notice however that said deflectors (6) do not necessarily need to be undulating. The applicant experienced, however, that a curved deflector (6) leads to better characteristics of the air flow created via said slot diffuser, by providing a smoother 'throw', being the specific horizontal and vertical distance the air flow traverses after leaving said slot diffuser. The throw is determined by the Coanda-effect, the effect whereby an air flow that is expelled near a parallel surface tends to 'cleave' to this surface whilst the air flows further. The Coanda-effect in slot diffusers is caused by a constriction in the flow surface near said deflectors (6). This causes a 'jet', the air flow accelerates, whereby air is sucked in (i.e. Venturi-effect). This results in local underpressure, whereby the air flow holds on to the surface. By providing curved deflectors (6), it is ensured that this is effect is minimal (certainly in closed state of said deflectors (6)) since there are no abrupt transitions in said slot diffuser.

[0066] In addition, alignment grooves (12) are provided at the outer side walls (2), outwardly oriented with respect to said slot diffuser. These are provided to align various successive slot diffusers with each other, and typically an alignment element (18) is slid into the alignment grooves (12) of both successive slot diffusers to enable them to follow correctly. In Fig. 1, the alignment grooves (12) are an approximately T-shaped recess, highly suitable in preventing the alignment elements (18) to break

loose once said slot diffusers are installed.

EXAMPLE 2:

[0067] Fig. 2A-2B and Fig. 3 show the so-called holding-down organs (15), which are preferably substantially hollow and open at the bottom, on the one hand to retain therewith said deflectors (6) at said pivot edges (19) in said pivot grooves (7) or holders, and on the other hand to limit the closed position of said deflectors (6) (by resting against the holding-down organ (15)), and finally, with the aid of the holding-down organs (15), to be fixed in a plenum, via a possibly further plenum attachment (17) and fastening means. In Fig. 2A-2B inter alia a snap-fit connector (21) can be seen. Notice also how the holding-down organs (15) in Fig. 4 and Fig. 5 show how said deflectors (6) can be restricted in their deviation, Fig. 4 focusing more attention to how the holding-down organs (15) are used to attach said slot diffuser in a plenum. Since the holding-down organs (15) in the current embodiment are open at the bottom thereof, an attachment element (16) can be used to fasten said slot diffuser to a plenum attachment (17) or directly in a plenum. The holding-down organs (15) immediately also show the benefit for the protruding clamping edges (11) at said rear side (4) of said side walls (2).

[0068] Fig. 3 shows a holding-down organ (15) in an alternative embodiment, where at the front of the holding-down organ (15) (again to be interpreted as the side lying at the front of said slot diffuser when therein operationally fixed) on both lateral sides a closing component (22) is present that extends further from the front and is adapted to further close off said pivot groove (7), such that the pivot edge (19) is better enclosed in said pivot groove. This is also visible in Fig. 7 and others, where a closing component (22) extends at the front of the holding-down organ (15). In this regard, it should also be noted that the closing component (22) follows the curvature of a thickened pivot edge (19) and preferably extends (over a certain length) such that the closing component (22) restrains said deflector in the first position, as mentioned, in order in this way to prevent said deflector (6) from making contact with the central portion (26) of the holding-down organ (15). Notice that the holding-down organ (15) in Fig. 3 is again provided with an opening (27) with which the holding-down organ (15) can be coupled to an overhanging structure such as a plenum, via fastening means as screws and such.

EXAMPLE 3:

[0069] Fig. 4, 5, 6 and 7 show longitudinal cross sections of a slot diffuser according to the invention, with deflectors (6) mounted and not mounted therein, and in some cases (for example in Fig. 4, 5, 7) also with holding-down organs (15) and even with further plenum attachment elements (17) (Fig. 4). In this regard, it can also be clearly seen how the holding-down organs (15) are adapted to be clamped fast in said slot diffuser, inter alia by downward sloping ridges that can slide in under the protruding clamping edges (11), and so maintaining the holding-down organ (15) in a fixed position. Fig. 4 and 5 show a slot diffuser with two ventilation slots (8), and thus three side walls (2). In this regard, a number of structures in or with said side walls (2) are formed (typically via extrusion thus running over the length of said slot diffuser), in first instance a pivot groove for said deflectors (6), specifically holding the thickened pivot edge (19) thereof. Said pivot groove is located approximately halfway on said side walls (2) between the front (5) and rear side (4) of said slot diffuser. In the case of the figures, the slots are adapted to only partly enclose the pivot edge (19) and not to be able to hold them without additional support of the holding-down organs (15). Creating such a pivot groove, whether via extrusion or not, is simpler, since the clasping structures protrude less and are less long than for a fuller clasping, and would be simpler to produce, without production loss by damage. In second instance, the outer side walls (2) also comprise another two slots, so-called alignment grooves (12), to correctly align successive slot diffusers (via an alignment element (18) running in an alignment groove (12) of both slot diffusers and so correctly positioning them). Said alignment grooves (12) provide a recess in said side wall (2), which on the inner side (with respect to said slot diffuser) also follow the same contour in order so to guarantee sufficient sturdiness.

[0070] Finally, an additional groove (20) still needs to be observed on the inner side of the outer side walls (2), in this case present just above said pivot groove for said deflectors (6). On the basis hereof, successive slot diffusers can again be correctly aligned, by inserting a pin herein running between the successive slot diffusers. Notice that this is not a necessary part of said slot diffuser per se.

[0071] Fig. 4 shows further a plenum attachment element (17) to which the holding-down organs (15), and thus said slot diffuser, are fixed via fastening means (for example screws). The holding-down organs (15), substantially hollow and open at the bottom, have an opening at the top side (or a weakening whereby an attachment means can be inserted in order so to make an opening) to slide the attachment means through and so to fasten the holding-down organ (15) to the plenum attachment (17).

[0072] Fig. 6A-E show a range of possible slot diffusers according to the invention with different numbers of ventilation slots (8). Notice that from this viewpoint it is not clear whether the cut-outs (14) are already mounted at said rear side (4) of said slot diffuser. This image therefore makes clear that a great advantage of the proposed slot diffuser lies therein that it can be produced as a single piece and the cut-outs (14) can be subsequently implemented to finish said slot diffuser. Finally, it should also be observed that such slot diffusers can also be made with yet more ventilation openings, and that the invention

is by no means limited by that which is shown here.

[0073] Finally, Fig. 7 shows an enlarged image of a slot diffuser with two ventilation slots (8) with a holding-down organ (15). In this regard it is quite clear that the form of the holding-down organ (15) is specifically adapted to be placed by clamping in said slot diffuser. Thus there is the slanted rising side to be pushed along said rear side (4) of said slot diffuser, past the protruding clamping edges (11), and the recess following that to then fixedly position the holding-down organ (15) with respect to said clamping edge (11). In addition, there are also two lip-shaped structures present at the bottom of the holding-down organ (15) that specifically serve to retain said deflectors (6) in their place (in the slots). By the form of the structures, these have some flexibility (and can serve as a spring). This allows a flexible mounting and can partly accommodate dimensional tolerances.

[0074] It is presumed that the current invention is not limited to the embodiments described above and that some adaptations of, or changes to, the examples described can be added without departing from the invention which is defined by the scope of the claims.

Claims

1. Slot diffuser (1) for blowing air into a chamber, comprising an elongated substantially beam-shaped frame with a flat front (5) and a rear (4) side, preferably substantially parallel with the front, the front comprising two or more longitudinally parallel extending slats (3) spaced a predetermined distance from each other, between which ventilation slots are formed, and a side wall (2) extending substantially perpendicular from each of said slats (3) at the front and extending along the longitudinal axis of said slats, whereby abutting side walls (2) define a chamber between them, whereby the longitudinal extremities of said side walls (2) are all connected with said abutting side walls (2) via end bridges (9) at said rear side of said slot diffuser, said end bridges (9) and said side walls (2) and said slats consisting of a single piece, said end bridges (9) extending between said abutting side walls near the distal extremities of said side walls with respect to said slats, and said abutting side walls optionally being further connected via centre bridges (10) at saic rear side of said slot diffuser, said centre bridges (10) and said side walls consisting of one piece and said centre bridges (10) extending between said abutting side walls near the distal extremities of said side walls with respect to said slats, said slot diffuser further being provided with one or more holding-down organs (15) in one or more of the chambers, said holding-down organs (15) not being single-piece with the slot diffuser itself, said holding-down organs (15) being adapted to anchor themselves to both said side walls (2) of the chamber by clamping fixedly on the side walls at the rear side of the slot diffuser, the holding-down organ (15) thereby extending at least to a central zone of both said side walls of the chamber, whereby said side walls on each side abutting another side wall comprise a pivot groove (7) running along the longitudinal axis of said side wall, said pivot groove being adapted for pivotally holding a deflector(6), **characterized in that** said slot diffuser further comprises two longitudinal deflectors (6) per ventilation slot substantially as long as the ventilation slot, said deflectors comprising a pivot edge (19) on one longitudinal side, and the pivot edge being adapted to be pivotally held in said pivot groove (7) around the pivot edge wherein said holding-down organ i (15) is adapted to partly close off said pivot grooves (7) across the longitudinal axis for enclosing said pivot edge (19) of said deflectors, saic holding-down organ (15) comprising on either side a closing component (22) suitable for enclosing said pivot edge (19) of said deflectors (6) in said pivot groove, the closing components (22) exhibiting limited flexibility or play with respect to said holding-dowr organ (15) to pivotally enclose said deflectors. deflectors (6).

2. Slot diffuser according to the previous claim 1, wherein the holding-down organs anchored in the slot diffuser are attached slidably over a distance of at least 2% of the length of the slot diffuser along the longitudinal axis of the slot diffuser.

3. Slot diffuser according to the previous claim 1 or 2, said pivot groove being positioned in the central zone of side walls.

4. Slot diffuser according to any of the previous claims 1 to 3, wherein the longitudinal deflectors comprise plastic.

5. Slot diffuser according to any of the previous claims 1 to 4, wherein said pivot edge is thickened, **characterized in that** said holding-down organs attached in said slot diffuser are adapted to fasten said pivot edge in said pivot groove.

6. Slot diffuser according to one of the previous claims 2 to 5, said deflectors having a curved profile that is constant along the longitudinal axis of said deflectors, and being pivotable between a first closed position and a second open position, the ventilation slot being closed when the two deflectors of said ventilation slot are in a closed position.

7. Slot diffuser according to one of the previous claims 1 to 6, said slot diffuser comprising a rear side parallel to the front and said rear side being substantially open in between said side walls, said side walls being mutually connected via said end bridges and at predetermined distances via centre bridges, said centre

bridges and said side walls consisting of one piece and said centre bridges extending between said abutting side walls near the distal extremities of said side walls with respect to said slats.

8. Slot diffuser according to one of the previous claims 1 to 7, said slot diffuser at the longitudinal extremities of said slats and said side walls being provided with a detachable end piece for further mutual connection of the longitudinal extremities of said side walls, and said end piece comprising a profile piece that connects to the flat of said slats and further extends along a predetermined distance thereof, the end piece preferably being detachably fastened to said slot diffuser on said side walls.

9. Slot diffuser according to one of the previous claims 1 to 8, said side walls standing at a mutual distance between 20 mm and 45 mm, preferably between 25 mm and 40 mm, with further preference approximately 34 mm, said ventilation slots having a width between 15 and 35 mm, preferably between 20 and 30 mm, and with further preference approximately 25 mm.

10. Slot diffuser according to one of the previous claims 1 to 9, said side walls and slats having a uniform wall thickness.

11. Slot diffuser according to one of the previous claims 1 to 10, said holding-down organs attached in said slot diffuser being adapted, preferably detachably, to be fixed to or in an upper-lying structure at said rear side of said slot diffuser via one or more fastening means, said holding-down organs preferably being adapted, via an attachment means provided with a screw thread, to be fixed to or in said upper-lying structure and said holding-down organs having one or more openings perpendicular to said rear side of said slot diffuser through said holding-down organs for fastening with the attachment means.

12. Slot diffuser according to one of the previous claims 1 to 11, said holding-down organ comprising a central portion with one or more connectors provided at lateral, opposite extremities of the central portion, the connectors comprising a groove, inwards with respect to said holding-down organ, oriented along a lateral axis of said holding-down organ, said groove extending along a longitudinal axis and being suitable for receiving a projecting snap-fit connector, the central portion being substantially hollow, the central portion optionally having one or more openings substantially perpendicular to the longitudinal axis and the lateral axis and being suitable to receive an attachment means through the same for fastening said holding-down organ to an upper-lying structure.

13. Method for manufacturing a substantially elongated slot diffuser for blowing air into a chamber, comprising the following steps:

e. the continuous extruding of said slot diffuser according to a fixed profile from a single piece of material to an elongated, essentially beam-shaped frame, said frame comprising one or more elongated chambers, extending essentially parallel with respect to each other along the longitudinal axis of said frame and being delimited by the front and said rear side and two side walls, preferably comprising aluminium, the extruded slot diffuser comprising a substantially flat, full rear side, further comprising two or more mutually equidistant side walls substantially perpendicular to said rear side and along the longitudinal axis of said slot diffuser, further comprising flat, mutually equidistant slats extending substantially parallel from on a distal extremity of said side walls with respect to said rear side, along said side walls, ventilation slots being present between said abutting slats and extending along the longitudinal axis, whereby said side walls on each side abutting another side wall comprise a pivot groove running along the longitudinal axis of said side wall;

f. the subsequently punching or milling out, preferably punching out, of substantially rectangular cut-outs in said rear side of said slot diffuser between said side walls along almost the entire length of said rear side, said side walls remaining connected via end bridges to the longitudinal extremities of said rear side, said rear side being open for at least 75%;

g. said abutting side walls, during the punching or milling out, preferably punching out, optionally remaining further connected via centre bridges, said centre bridges and said side walls consisting of one piece and said centre bridges extending between said abutting side walls near the distal extremities of said side walls with respect to said slats;

h. the placing of deflectors in said frame, said deflectors being fixed to said side walls of the chambers, pivotally around the longitudinal axis of said frame, and said deflectors being adapted, in a first position, to substantially prevent air flow through the chambers, and, in a second position, to allow the flow of air through the chambers;

and providing one or more holding-down organs, not being single-piece with the slot diffuser itself, in said chambers, said holding-down organs being adapted for the retention of said deflectors in the first position, said holding-down organs being adapted to anchor themselves to both said side walls of the chamber by clamping fixedly on the side walls at the rear side

of the slot diffuser, the holding-down organ thereby extending at least to a central zone of both said side walls of the chamber, said pivot groove being adapted for pivotally holding a deflector,**characterized in that in that** said slot diffuser further comprises two longitudinal deflectors per ventilation slot, substantially as long as the ventilation slot, said deflectors comprising a pivot edge on one longitudinal side, and the pivot edge being adapted to be pivotally held in said pivot groove around the pivot edge,
wherein said holding-down organ is adapted to partly close off said pivot grooves across the longitudinal axis for enclosing said pivot edge of said deflectors, said holding-down organ comprising on either side a closing component suitable for enclosing said pivot edge of said deflectors in said pivot groove, the closing components exhibiting limited flexibility or play with respect to said holding-down organ to pivotally enclose said deflectors.

Patentansprüche

1. Schlitzauslass (1) zum Blasen von Luft in eine Kammer, einen langgestreckten, im Wesentlichen balkenförmigen Rahmen mit einer flachen Vorderseite (5) und einer Rückseite (4), die vorzugsweise im Wesentlichen parallel zur Vorderseite liegt, umfassend, wobei die Vorderseite zwei oder mehrere längsgerichtete, sich parallel erstreckende Lamellen (3) umfasst, die in einem festgelegten Abstand voneinander beabstandet sind, zwischen denen Belüftungsschlitze gebildet sind, und eine Seitenwand (2), die sich im Wesentlichen senkrecht von jeder der Lamellen (3) an der Vorderseite erstreckt und sich entlang der Längsachse der Lamellen erstreckt, wobei angrenzende Seitenwände (2) zwischen sich eine Kammer definieren,

wobei die längsgerichteten Endpunkte der Seitenwände (2) mittels Endbrücken (9) an der Rückseite des Schlitzauslasses alle mit den angrenzenden Seitenwänden (2) verbunden sind, wobei die Endbrücken (9) und die Seitenwände (2) und die Lamellen aus einem Stück bestehen, wobei sich die Endbrücken (9) zwischen den angrenzenden Seitenwänden (2) nahe den distalen Endpunkten der Seitenwände in Bezug auf die Lamellen erstrecken, und die angrenzenden Seitenwände ferner optional mittels Mittelbrücken (10) an der Rückseite des Schlitzauslasses verbunden sind, wobei die Mittelbrücken (10) und die Seitenwände aus einem Stück bestehen und sich die Mittelbrücken (10) zwischen den angrenzenden Seitenwänden nahe den distalen Endpunkten der Seitenwände in Bezug auf die Lamellen erstrecken,
wobei der Schlitzauslass ferner mit einem oder mehreren Niederhalteorganen (15) in einer oder mehreren der Kammern versehen ist, wobei die Niederhalteorgane (15) nicht einstückig mit dem Schlitzauslass selbst gebildet sind, wobei die Niederhalteorgane (15) dafür eingerichtet sind, sich selbst an beiden der Seitenwände (2) der Kammer zu verankern, indem sie sich an der Rückseite des Schlitzauslasses an den Seitenwänden festklemmen, wobei sich die Niederhalteorgane (15) dadurch mindestens zu einem mittleren Bereich beider Seitenwände der Kammer erstrecken, wobei die Seitenwände an jeder Seite, die an eine andere Seitenwand angrenzt, eine Drehrille (7) umfassen, die entlang der Längsachse der Seitenwand verläuft, wobei die Drehrille dafür eingerichtet ist, eine Prallplatte (6) drehbar zu halten, **dadurch gekennzeichnet, dass** der Schlitzauslass ferner zwei längsgerichtete Prallplatten (6) pro Belüftungsschlitz umfasst, die im Wesentlichen so lang wie der Belüftungsschlitz sind, wobei die Prallplatten eine Drehkante (19) an einer Längsseite umfassen, und die Drehkante dafür eingerichtet ist, rings um die Drehkante drehbar in der Drehrille (7) gehalten zu werden,
wobei das Niederhalteorgan (15) dafür eingerichtet ist, die Drehrillen (7) über die Längsachse teilweise zu verschließen, um die Drehkante (19) der Prallplatten einzuschließen, wobei das Niederhalteorgan (15) an jeder Seite eine Verschlusskomponente (22) umfasst, die dazu geeignet ist, die Drehkante (19) der Prallplatten (6) in der Drehrille einzuschließen, wobei die Verschlusskomponenten (22) begrenzte Flexibilität oder begrenztes Spiel in Bezug auf das Niederhalteorgan (15) aufweisen, um die Prallplatten (6) drehbar einzuschließen.

2. Schlitzauslass nach dem vorhergehenden Anspruch 1, wobei die in dem Schlitzauslass verankerten Niederhalteorgane gleitfähig über eine Distanz von mindestens 2 % der Länge des Schlitzauslasses entlang der Längsachse des Schlitzauslasses angebracht sind.

3. Schlitzauslass nach dem vorhergehenden Anspruch 1 oder 2, wobei die Drehrille in dem mittleren Bereich der Seitenwände positioniert ist.

4. Schlitzauslass nach einem der vorhergehenden Ansprüche 1 bis 3, wobei die längsgerichteten Prallplatten Kunststoff umfassen.

5. Schlitzauslass nach einem der vorhergehenden Ansprüche 1 bis 4, wobei die Drehkante verdickt ist, **dadurch gekennzeichnet**, das die in dem Schlitzauslass angebrachten Niederhalteorgane dafür eingerichtet sind, die Drehkante in der Drehrille

zu befestigen.

6. Schlitzauslass nach einem der vorhergehenden Ansprüche 2 bis 5, wobei die Prallplatten ein gekrümmtes Profil aufweisen, das entlang der Längsachse der Prallplatten konstant ist und zwischen einer ersten, geschlossenen Position und einer zweiten, geöffneten Position drehbar ist, wobei der Belüftungsschlitz geschlossen ist, wenn sich die zwei Prallplatten des Belüftungsschlitzes in einer geschlossenen Position befinden.

7. Schlitzauslass nach einem der vorhergehenden Ansprüche 1 bis 6, wobei der Schlitzauslass eine Rückseite umfasst, die parallel zur Vorderseite liegt, und die Rückseite zwischen den Seitenwänden im Wesentlichen offen ist, wobei die Seitenwände mittels der Endbrücken und in festgelegten Abständen mittels Mittelbrücken wechselseitig verbunden sind, wobei die Mittelbrücken und die Seitenwände aus einem Stück bestehen und sich die Mittelbrücken zwischen den angrenzenden Seitenwänden nahe den distalen Endpunkten der Seitenwände in Bezug auf die Lamellen erstrecken.

8. Schlitzauslass nach einem der vorhergehenden Ansprüche 1 bis 7, wobei der Schlitzauslass an den längsgerichteten Endpunkten der Lamellen und den Seitenwänden mit einem lösbaren Endstück für eine weitere wechselseitige Verbindung der längsgerichteten Endpunkte der Seitenwände versehen ist, und das Endstück ein Profilstück umfasst, das mit der flachen Seite der Lamellen verbunden ist und sich ferner über einen festgelegten Abstand derselben erstreckt, wobei das Endstück vorzugsweise lösbar an den Seitenwänden an dem Schlitzauslass befestigt ist.

9. Schlitzauslass nach einem der vorhergehenden Ansprüche 1 bis 8, wobei die Seitenwände in einem Abstand zwischen 20 mm und 45 mm zueinander stehen, vorzugsweise zwischen 25 mm und 40 mm, bevorzugter von ungefähr 34 mm, wobei die Belüftungsschlitze eine Breite zwischen 15 und 35 mm aufweisen, vorzugsweise zwischen 20 und 30 mm und bevorzugter von ungefähr 25 mm.

10. Schlitzauslass nach einem der vorhergehenden Ansprüche 1 bis 9, wobei die Seitenwände und die Lamellen eine einheitliche Wanddicke aufweisen.

11. Schlitzauslass nach einem der vorhergehenden Ansprüche 1 bis 10, wobei die in dem Schlitzauslass angebrachten Niederhalteorgane dafür eingerichtet sind, mittels eines oder mehrerer Befestigungsmittel vorzugsweise lösbar an oder in einer darüberliegenden Struktur an der Rückseite des Schlitzauslass befestigt zu sein, wobei die Niederhalteorgane vorzugsweise dafür eingerichtet sind, mittels eines Anbringungsmittels, das mit einem Schraubgewinde versehen ist, an oder in der darüberliegenden Struktur befestigt zu sein, und die Niederhalteorgane eine oder mehrere Öffnungen senkrecht zu der Rückseite des Schlitzauslasses durch die Niederhalteorgane hindurch zum Befestigen mit dem Anbringungsmittel aufweisen.

12. Schlitzauslass nach einem der vorhergehenden Ansprüche 1 bis 11, wobei das Niederhalteorgan einen mittleren Abschnitt mit einem oder mehreren Verbindungsstücken umfasst, die an seitlichen, gegenüberliegenden Endpunkten des mittleren Abschnitts bereitgestellt sind, wobei die Verbindungsstücke in Bezug auf das Niederhalteorgan einwärts eine Rille umfassen, die entlang einer lateralen Achse des Niederhalteorgans ausgerichtet ist, wobei sich die Rille entlang einer Längsachse erstreckt und zur Aufnahme eines hervorstehenden Schnappverbindungsstücks geeignet ist, wobei der mittlere Abschnitt im Wesentlichen hohl ist, wobei der mittlere Abschnitt optional eine oder mehrere Öffnungen aufweist, die im Wesentlichen senkrecht zu der Längsachse und der lateralen Achse liegen und geeignet sind, durch sich hindurch ein Anbringungsmittel zum Befestigen des Niederhalteorgans an einer darüberliegenden Struktur aufzunehmen.

13. Verfahren zur Herstellung eines im Wesentlichen langgestreckten Schlitzauslasses zum Blasen von Luft in eine Kammer, die folgenden Schritte umfassend:

    a. das kontinuierliche Extrudieren des Schlitzauslasses gemäß einem festen Profil aus einem einzigen Materialstück zu einem langgestreckten, im Wesentlichen balkenförmigen Rahmen, wobei der Rahmen eine oder mehrere langgestreckte Kammern umfasst, die sich in Bezug zueinander im Wesentlichen parallel entlang der Längsachse des Rahmens erstrecken und durch die Vorder- und die Rückseite und zwei Seitenwände begrenzt sind, vorzugsweise Aluminium umfassend, wobei der extrudierte Schlitzauslass eine im Wesentlichen flache massive Rückseite umfasst, ferner zwei oder mehr wechselseitig gleich beabstandete Seitenwände im Wesentlichen senkrecht zu der Rückseite und entlang der Längsachse des Schlitzauslasses umfasst, ferner flache, wechselseitig gleich beabstandete Lamellen umfasst, die sich im Wesentlichen parallel von einem distalen Endpunkt der Seitenwände in Bezug auf die Rückseite erstrecken, wobei entlang der Seitenwände zwischen den angrenzenden Lamellen Belüftungsschlitze vorhanden sind und sich entlang der Längsachse erstrecken,

wobei die Seitenwände an jeder Seite, die an eine andere Seitenwand grenzt, eine Drehrille umfassen, die entlang der Längsachse der Seitenwand verläuft;

b. das nachfolgende Ausstanzen oder Ausfräsen, vorzugsweise Ausstanzen, im Wesentlichen rechteckiger Ausschnitte in der Rückseite des Schlitzauslasses zwischen den Seitenwänden entlang fast der gesamten Länge der Rückseite, wobei die Seitenwände mittels Endbrücken zu den längsgericheten Endpunkten der Rückseite verbunden bleiben, wobei die Rückseite zu mindestens 75 % offen ist,

c. wobei die angrenzenden Seitenwände während des Ausstanzens oder Ausfräsens, vorzugsweise Ausstanzens, optional ferner mittels Mittelbrücken verbunden bleiben, wobei die Mittelbrücken und die Seitenwände aus einem Stück bestehen und sich die Mittelbrücken zwischen den angrenzenden Seitenwänden nahe den distalen Endpunkten der Seitenwände in Bezug auf die Lamellen erstrecken,

d. das Platzieren von Prallplatten in dem Rahmen, wobei die Prallplatten an den Seitenwänden der Kammern, drehbar um die Längsachse des Rahmens, befestigt sind und die Prallplatten dafür eingerichtet sind, in einer ersten Position im Wesentlichen das Strömen von Luft durch die Kammern zu verhindern, und in einer zweiten Position das Strömen von Luft durch die Kammern zu gestatten,

und Bereitstellen eines oder mehrerer Niederhalteorgane, die nicht einstückig mit dem Schlitzauslass selbst gebildet sind, in den Kammern, wobei die Niederhalteorgane dafür eingerichtet sind, die Prallplatten in der ersten Position zu halten, wobei die Niederhalteorgane dafür eingerichtet sind, sich an beiden der Seitenwände der Kammer durch Festklemmen an den Seitenwände an der Rückseite des Schlitzauslasses zu verankern, wobei sich das Niederhalteorgan dadurch mindestens zu einem mittleren Bereich beider der Seitenwände der Kammer erstreckt, wobei die Drehrille dafür eingerichtet ist, eine Prallplatte drehbar zu halten, **dadurch gekennzeichnet, dass** der Schlitzauslass ferner zwei längsgerichtete Prallplatten pro Belüftungsschlitz umfasst, die im Wesentlichen so lang wie der Belüftungsschlitz sind, wobei die Prallplatten eine Drehkante an einer Längsseite umfassen, und die Drehkante dafür eingerichtet ist, rings um die Drehkante drehbar in der Drehrille gehalten zu werden,

wobei das Niederhalteorgan dafür eingerichtet ist, die Drehrillen über die Längsachse teilweise zu verschließen, um die Drehkante der Prallplatten einzuschließen, wobei das Niederhalteorgan an jeder Seite eine Verschlusskomponente umfasst, die dazu geeignet ist, die Drehkante der Prallplatten in der Drehrille einzuschließen, wobei die Verschlusskomponenten begrenzte Flexibilität oder begrenztes Spiel in Bezug auf das Niederhalteorgan aufweisen, um die Prallplatten drehbar einzuschließen.

Revendications

1. Diffuseur à fentes (1) pour insuffler de l'air dans une chambre, comprenant un cadre allongé sensiblement en forme de poutre avec un côté avant plat (5) et un côté arrière (4), de préférence sensiblement parallèle à l'avant, l'avant comprenant deux lames ou plus s'étendant parallèlement longitudinalement (3) espacées d'une distance prédéterminée les unes des autres, entre lesquelles des fentes de ventilation sont formées, et une paroi latérale (2) s'étendant sensiblement perpendiculairement à partir de chacune desdites lames (3) au niveau de l'avant et s'étendant le long de l'axe longitudinal desdites lames, moyennant quoi des parois latérales aboutées (2) définissent une chambre entre elles,

moyennant quoi les extrémités longitudinales desdites parois latérales (2) sont toutes reliées auxdites parois latérales aboutées (2) via des ponts d'extrémité (9) au niveau dudit côté arrière dudit diffuseur à fentes, lesdits ponts d'extrémité (9) et lesdites parois latérales (2) et lesdites lames étant constituées d'une seule pièce, lesdits ponts d'extrémité (9) s'étendant entre lesdites parois latérales aboutées à proximité des extrémités distales desdites parois latérales par rapport auxdites lames, et lesdites parois latérales aboutées étant en outre éventuellement reliées via des ponts centraux (10) au niveau dudit côté arrière dudit diffuseur à fentes, lesdits ponts centraux (10) et lesdites parois latérales étant constitués d'une seule pièce et lesdits ponts centraux (10) s'étendant entre lesdites parois latérales aboutées à proximité des extrémités distales desdites parois latérales par rapport auxdites lames,

ledit diffuseur à fentes étant en outre pourvu d'un ou plusieurs organes d'ablocage (15) dans une ou plusieurs des chambres, lesdits organes d'ablocage (15) n'étant pas monobloc avec le diffuseur à fentes lui-même, lesdits organes d'ablocage (15) étant prévus pour s'ancrer auxdites deux parois latérales (2) de la chambre par serrage fixe sur les parois latérales au niveau du côté arrière du diffuseur à fentes, l'organe d'ablocage (15) s'étendant ainsi au moins jusqu'à une zone centrale desdites deux parois latérales de la chambre, moyennant quoi lesdites parois latérales de chaque côté en butée contre une autre paroi latérale comprennent une rainure de pivotement (7) s'étendant le long de

l'axe longitudinal de ladite paroi latérale, ladite rainure de pivotement étant conçue pour maintenir de manière pivotante un déflecteur (6), **caractérisé en ce que** ledit diffuseur à fentes comprend en outre deux déflecteurs longitudinaux (6) par fente de ventilation, sensiblement aussi longs que la fente de ventilation, lesdits déflecteurs comprenant un bord pivotant (19) sur un côté longitudinal, et le bord pivotant étant conçu pour être maintenu de manière pivotante dans ladite rainure de pivotement (7) autour du bord pivotant,

dans lequel ledit organe d'ablocage (15) est conçu pour obturer partiellement lesdites rainures de pivotement (7) à travers l'axe longitudinal pour enfermer ledit bord pivotant (19) desdits déflecteurs, ledit organe d'ablocage (15) comprenant de chaque côté un composant de fermeture (22) conçu pour enfermer ledit bord pivotant (19) desdits déflecteurs (6) dans ladite rainure de pivotement, les composants de fermeture (22) présentant une souplesse ou un jeu limités par rapport audit organe d'ablocage (15) pour enfermer de manière pivotante lesdits déflecteurs (6).

2. Diffuseur à fentes selon la revendication précédente 1, dans lequel les organes d'ablocage ancrés dans le diffuseur à fentes sont fixés de manière coulissante sur une distance d'au moins 2 % de la longueur du diffuseur à fentes le long de l'axe longitudinal du diffuseur à fentes.

3. Diffuseur à fentes selon la revendication précédente 1 ou 2, ladite rainure de pivotement étant positionnée dans la zone centrale des parois latérales.

4. Diffuseur à fentes selon l'une quelconque des revendications précédentes 1 à 3, dans lequel les déflecteurs longitudinaux comprennent du plastique.

5. Diffuseur à fentes selon l'une quelconque des revendications précédentes 1 à 4, dans lequel ledit bord pivotant est épaissi, **caractérisé en ce que** lesdits organes d'ablocage fixés dans ledit diffuseur à fentes sont conçus pour fixer ledit bord pivotant dans ladite rainure de pivotement.

6. Diffuseur à fentes selon l'une des revendications précédentes 2 à 5, lesdits déflecteurs ayant un profil courbe qui est constant le long de l'axe longitudinal desdits déflecteurs, et pouvant pivoter entre une première position fermée et une deuxième position ouverte, la fente de ventilation étant fermée lorsque les deux déflecteurs de ladite fente de ventilation sont en position fermée.

7. Diffuseur à fentes selon l'une des revendications précédentes 1 à 6, ledit diffuseur à fentes comprenant un côté arrière parallèle à l'avant et ledit côté arrière étant sensiblement ouvert entre lesdites parois latérales, lesdites parois latérales étant reliées mutuellement par l'intermédiaire desdits ponts d'extrémité et à des distances prédéterminées via des ponts centraux, lesdits ponts centraux et lesdites parois latérales étant constitués d'une seule pièce et lesdits ponts centraux s'étendant entre lesdites parois latérales aboutées à proximité des extrémités distales desdites parois latérales par rapport auxdites lames.

8. Diffuseur à fentes selon l'une des revendications précédentes 1 à 7, ledit diffuseur à fentes au niveau des extrémités longitudinales desdites lames et desdites parois latérales étant pourvu d'un embout amovible pour une connexion mutuelle supplémentaire des extrémités longitudinales desdites parois latérales, et ledit embout comprenant une pièce profilée qui se raccorde au plat desdites lames et s'étend en outre sur une distance prédéterminée de celles-ci, ledit embout étant de préférence fixé de manière amovible audit diffuseur à fentes sur lesdites parois latérales.

9. Diffuseur à fentes selon l'une des revendications précédentes 1 à 8, lesdites parois latérales étant situées à une distance mutuelle comprise entre 20 mm et 45 mm, de préférence entre 25 mm et 40 mm, plus préférentiellement à environ 34 mm, lesdites fentes de ventilation ayant une largeur comprise entre 15 et 35 mm, de préférence entre 20 et 30 mm, et encore plus préférentiellement d'environ 25 mm.

10. Diffuseur à fentes selon l'une des revendications précédentes 1 à 9, lesdites parois latérales et lames ayant une épaisseur de paroi uniforme.

11. Diffuseur à fentes selon l'une des revendications précédentes 1 à 10, lesdits organes d'ablocage fixés dans ledit diffuseur à fentes étant conçus, de préférence de manière amovible, pour être fixés à ou dans une structure supérieure au niveau dudit côté arrière dudit diffuseur à fentes via un ou plusieurs moyens de fixation, lesdits organes d'ablocage étant de préférence conçus, via un moyen de fixation pourvu d'un filetage, pour être fixés à ou dans ladite structure supérieure et lesdits organes d'ablocage ayant une ou plusieurs ouvertures perpendiculaires audit côté arrière dudit diffuseur à fentes à travers lesdits organes d'ablocage pour la fixation avec les moyens de fixation.

12. Diffuseur à fentes selon l'une des revendications précédentes 1 à 11, ledit organe d'ablocage comprenant une partie centrale avec un ou plusieurs connecteurs prévus au niveau d'extrémités latérales op-

posées de la partie centrale, les connecteurs comprenant une rainure, vers l'intérieur par rapport audit organe d'ablocage, orientée le long d'un axe latéral dudit organe d'ablocage, ladite rainure s'étendant le long d'un axe longitudinal et étant apte à recevoir un connecteur à encliquetage en saillie, la partie centrale étant sensiblement creuse, la partie centrale comportant éventuellement une ou plusieurs ouvertures sensiblement perpendiculaires à l'axe longitudinal et à l'axe latéral et étant conçues pour recevoir un moyen de fixation à travers celles-ci pour fixer ledit organe d'ablocage à une structure supérieure.

13. Procédé de fabrication d'un diffuseur à fentes sensiblement allongé pour insuffler de l'air dans une chambre, comprenant les étapes suivantes :

a. l'extrusion en continu dudit diffuseur à fentes selon un profil fixe à partir d'une seule pièce de matériau en un cadre allongé essentiellement en forme de poutre, ledit cadre comprenant une ou plusieurs chambres allongées, s'étendant essentiellement parallèlement les unes aux autres le long de l'axe longitudinal dudit cadre et étant délimité par l'avant et ledit côté arrière et deux parois latérales, comprenant de préférence de l'aluminium, le diffuseur à fentes extrudé comprenant un côté arrière plein sensiblement plat, comprenant en outre deux parois latérales ou plus mutuellement équidistantes sensiblement perpendiculaires audit côté arrière et le long de l'axe longitudinal dudit diffuseur à fentes, comprenant en outre des lames plates mutuellement équidistantes s'étendant sensiblement parallèlement à partir d'une extrémité distale desdites parois latérales par rapport audit côté arrière, le long desdites parois latérales, des fentes de ventilation étant présentes entre lesdites lames aboutées et s'étendant le long de l'axe longitudinal, moyennant quoi lesdites parois latérales de chaque côté en butée contre une autre paroi latérale comprennent une rainure de pivotement s'étendant le long de l'axe longitudinal de ladite paroi latérale ;

b. le poinçonnage ou le fraisage subséquent, de préférence le poinçonnage, de découpes sensiblement rectangulaires dans ledit côté arrière dudit diffuseur à fentes entre lesdites parois latérales sur presque toute la longueur dudit côté arrière, lesdites parois latérales restant reliées par des ponts d'extrémité aux extrémités longitudinales dudit côté arrière, ledit côté arrière étant ouvert à au moins 75 % ;

c. lesdites parois latérales aboutées, pendant le poinçonnage ou le fraisage, de préférence le poinçonnage, restant éventuellement reliées en outre par des ponts centraux, lesdits ponts centraux et lesdites parois latérales étant constitués d'une seule pièce et lesdits ponts centraux s'étendant entre lesdites parois latérales aboutées à proximité des extrémités distales desdites parois latérales par rapport auxdites lames ;

d. le placement de déflecteurs dans ledit cadre, lesdits déflecteurs étant fixés auxdites parois latérales des chambres, de manière pivotante autour de l'axe longitudinal dudit cadre, et lesdits déflecteurs étant conçus, dans une première position, pour empêcher sensiblement la circulation d'air à travers les chambres, et, dans une seconde position, pour permettre la circulation d'air à travers les chambres ;

et la fourniture d'un ou plusieurs organes d'ablocage, non monobloc avec le diffuseur à fentes lui-même, dans lesdites chambres, lesdits organes d'ablocage étant conçus pour maintenir lesdits déflecteurs dans la première position, lesdits organes d'ablocage étant conçus pour s'ancrer auxdites deux parois latérales de la chambre par serrage fixe sur les parois latérales au niveau du côté arrière du diffuseur à fentes, l'organe d'ablocage s'étendant ainsi au moins jusqu'à une zone centrale desdites deux parois latérales de la chambre, ladite rainure de pivotement étant conçue pour maintenir de manière pivotante un déflecteur, **caractérisé en ce que** ledit diffuseur à fentes comprend en outre deux déflecteurs longitudinaux par fente de ventilation, sensiblement aussi longs que la fente de ventilation, lesdits déflecteurs comprenant un bord pivotant sur un côté longitudinal, et le bord pivotant étant conçu pour être maintenu de manière pivotante dans ladite rainure de pivotement autour du bord pivotant,
dans lequel ledit organe d'ablocage est conçu pour obturer partiellement lesdites rainures de pivotement à travers l'axe longitudinal pour enfermer ledit bord pivotant desdits déflecteurs, ledit organe d'ablocage comprenant de chaque côté un composant de fermeture conçu pour enfermer ledit bord pivotant desdits déflecteurs dans ladite rainure de pivotement, les composants de fermeture présentant une souplesse ou un jeu limités par rapport audit organe d'ablocage pour enfermer de manière pivotante lesdits déflecteurs.

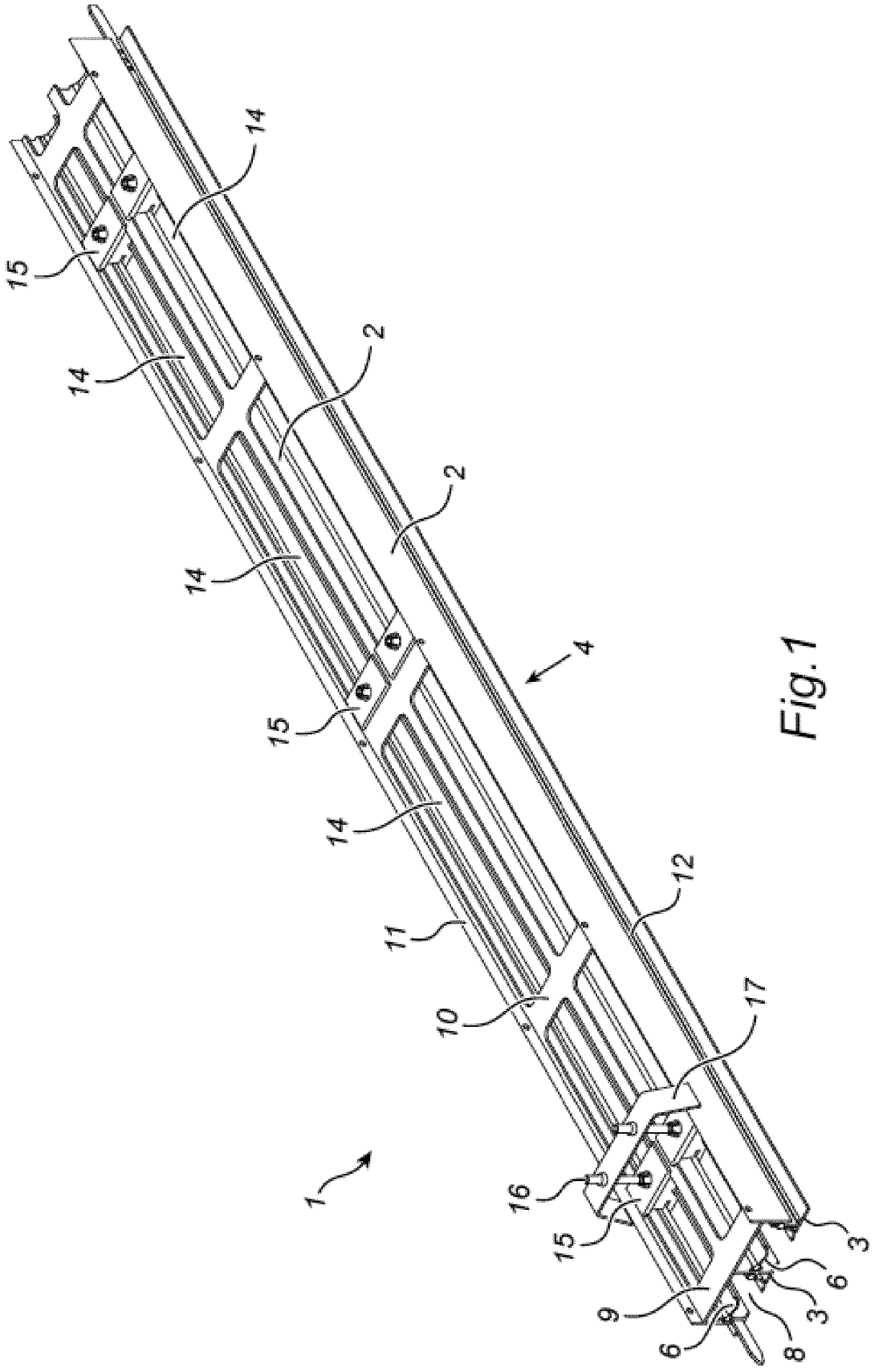

Fig.1

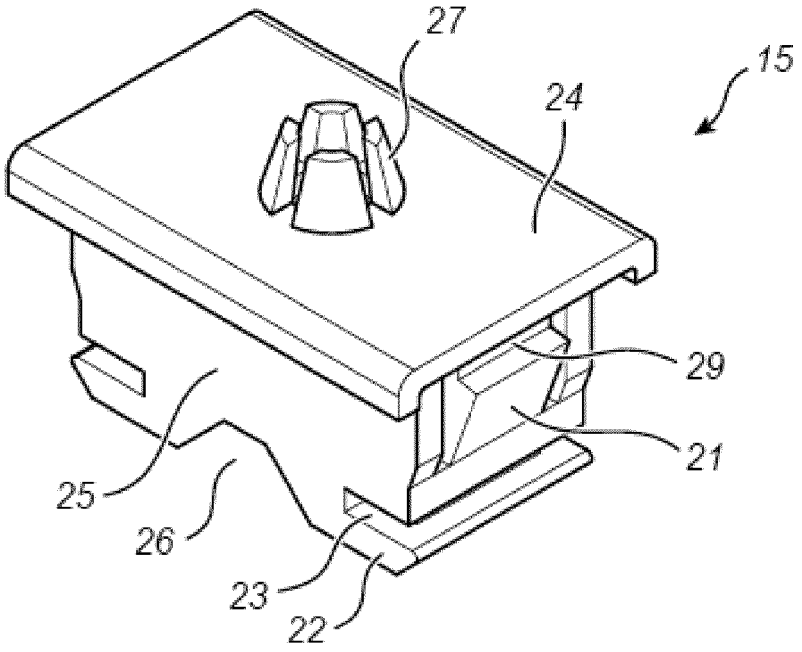

Fig.2A

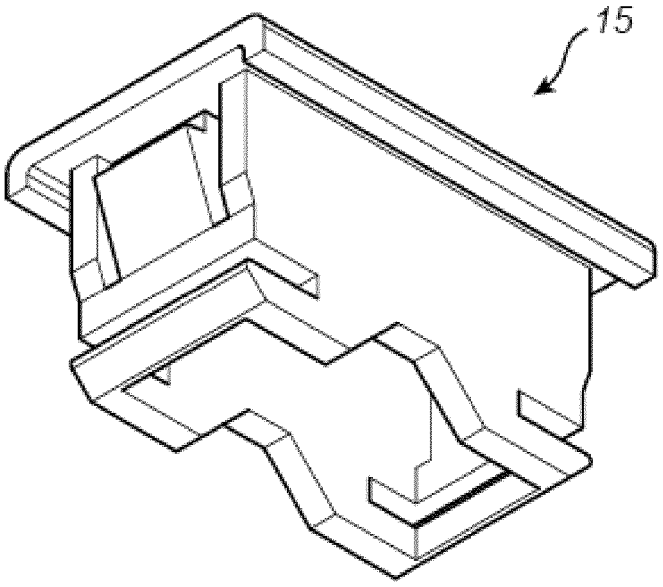

Fig.2B

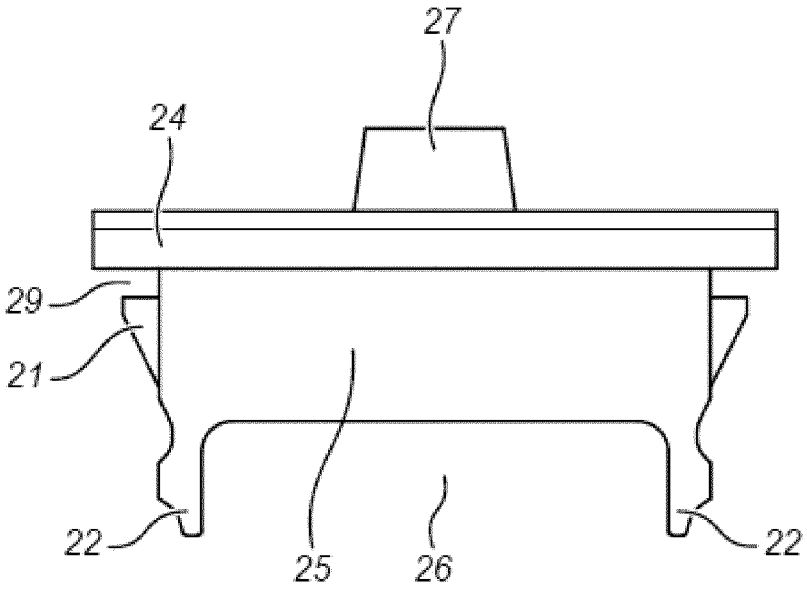

Fig.3

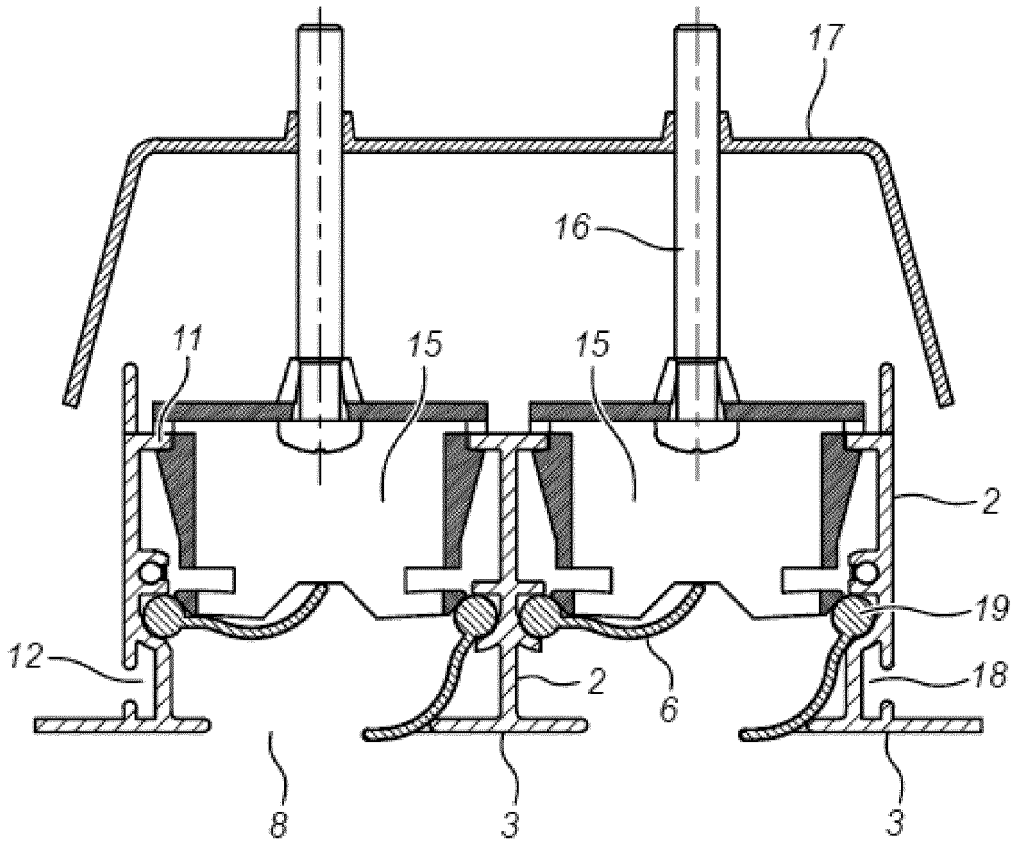

Fig.4

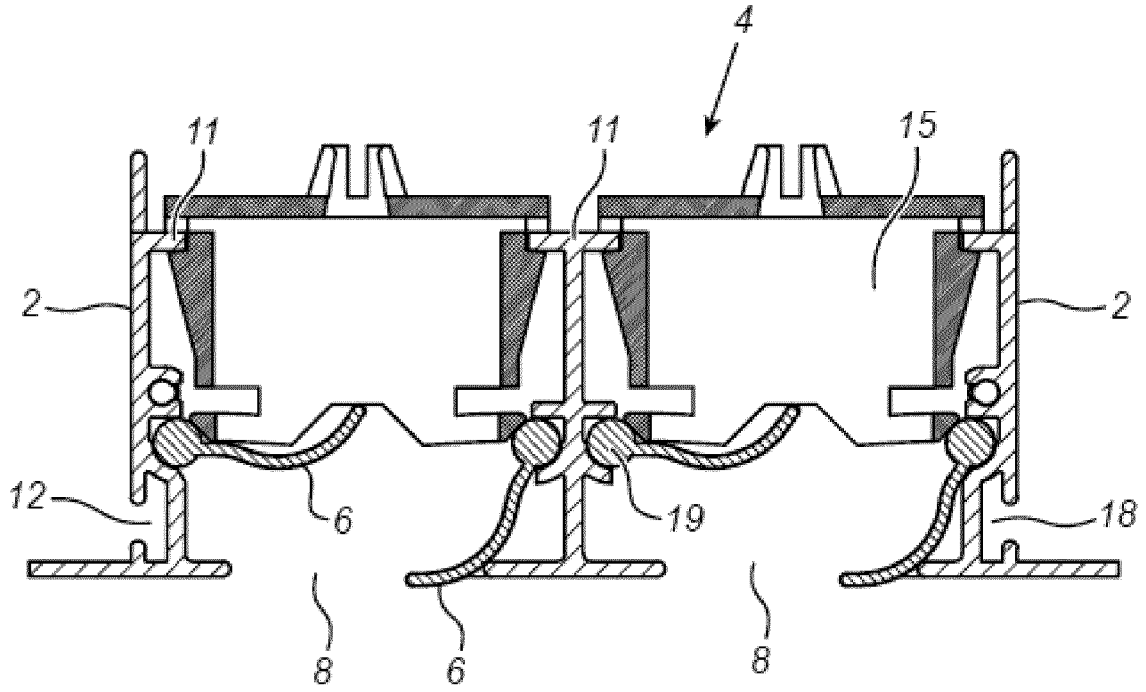

Fig.5

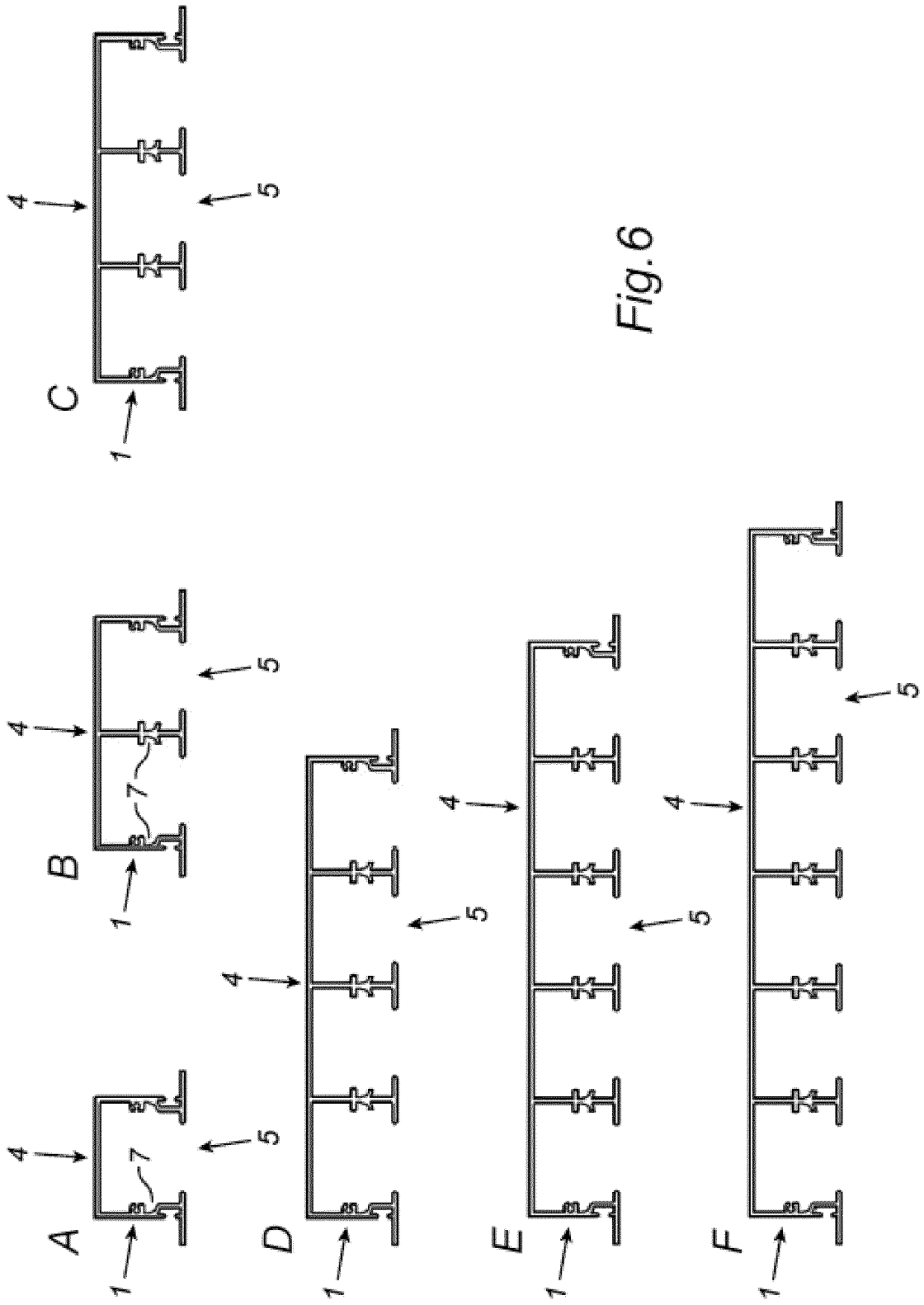

Fig.6

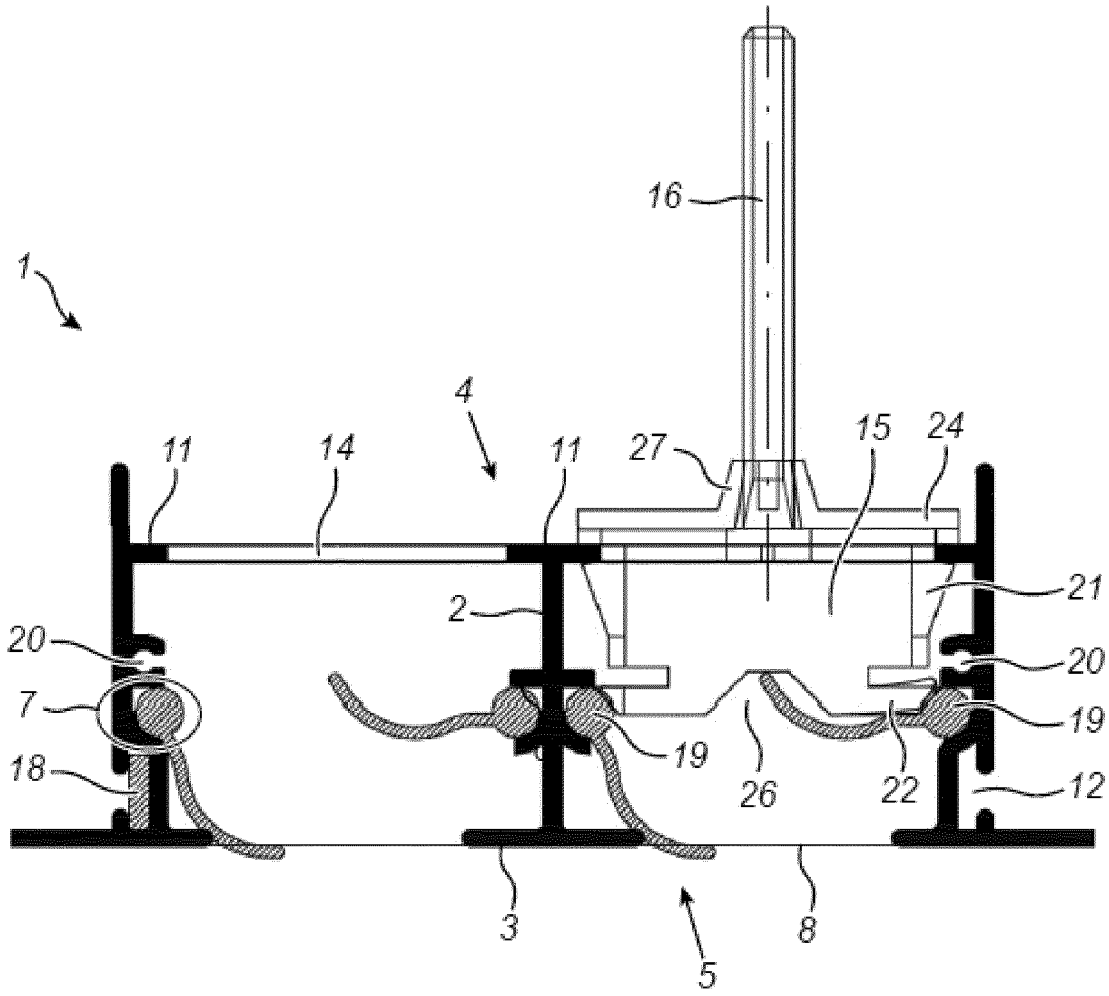

Fig.7

REFERENCES CITED IN THE DESCRIPTION

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