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(54) **Ventilation grille for air intakes**

Gitter für Lufteinlass

Grille de ventilation pour entrée d'air

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(56) References cited:
AU-A- 492 749
GB-A- 846 835
US-A- 5 410 782

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Description

[0001] The present invention relates to a ventilation grille for air intakes.

[0002] Ventilation grilles for air intakes are currently commercially available which substantially comprise a circular or square annular surrounding body, a plurality of parallel and spaced vanes which are monolithic with the frame, and at least one stiffening element that runs from one end of the surrounding frame to the other transversely with respect to the vanes and is also monolithic with the rest.

[0003] Although such ventilation grilles perform their task, they are not free from drawbacks, the main one being the fact that since they must adapt to several applications, they must be produced in models that differ from one another owing to the provision of particular anchoring means and to the presence of optional auxiliary filtering means.

[0004] The manufacturer must therefore provide for a plurality of production lines, each assigned to an individual grille model, and the user is furthermore substantially limited in the choice of the grille, which is conceived for a very specific application.

[0005] AU-A-492 749 discloses a ventilation grille as defined in the preamble of claim 1.

[0006] A principal aim of the present invention is to provide a ventilation grille for air intakes which, in addition to acting as an effective element for protecting against the entry of foreign objects in ducts or pipes protected thereby, provides great flexibility in application.

[0007] Accordingly, an object of the present invention is to provide a ventilation grille the production whereof does not require a plurality of production lines, each assigned to a particular model dedicated to specific application characteristics.

[0008] Another object of the present invention is to provide a ventilation grille the structure whereof is simple and sturdy and is capable of withstanding bad weather, atmospheric agents, shocks, and impacts.

[0009] Another object of the present invention is to provide a ventilation grille that performs its task for a long time and shows a certain range of adaptation to the diameters and the widths of the ducts or pipes to which it is to be applied.

[0010] Another object of the present invention is to provide a ventilation grille that can be manufactured at competitive costs with respect to conventional ventilation grilles but can also be produced in models having a pleasant aesthetics.

[0011] This aim, these objects, and others which will become apparent hereinafter are achieved by a ventilation grille for air intakes, as defined in the appended claims.

[0012] Further characteristics and advantages of the present invention will become apparent from the following detailed description of three embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figures 1 and 2 are, respectively, an axonometric view and an orthographic projection view of a ventilation grille, according to the invention, in a first embodiment and according to a first configuration thereof;
figures 3 and 4 are two other orthographic projection views of the grille according to the first configuration of the first embodiment;
figure 5 is another orthographic projection view of the ventilation grille of figure 1;
figures 6 and 6a are an orthographic projection view and a sectional view of the first configuration with an insect-blocking mesh related to the first embodiment of the ventilation grille according to the invention;
figures 7 and 8 are, respectively, an axonometric view and an orthographic projection view of a second configuration of the ventilation grille according to the invention in the first embodiment;
figures 9, 10, and 11 are further orthographic projection views of the second configuration of the first embodiment; figures 12 to 17 are views of a ventilation grille according to the invention in a fourth embodiment;
figures 18 to 21 are views of a ventilation grille according to the invention in a fifth embodiment.

[0013] With particular reference to figures 1 to 15, a ventilation grille for air intakes, according to the invention, substantially consists, in a first embodiment, of a plurality of elements that can be sold in preassembled form or can be assembled directly by the user and the combinations whereof produce different configurations, each adapted for a particular application.

[0014] In particular, three possible configurations are illustrated hereinafter, which however do not fully cover the range of possibilities of the ventilation grille and must be considered merely as examples.

[0015] With particular reference to figures 1 to 6, the grille, in a first configuration, comprises an annular body 11 that is made of plastics and is monolithic with a plurality of parallel and spaced vanes 12.

[0016] Said body 11 is provided with a stiffening element 13 that is fixed transversely to the vanes 12.

[0017] A perimetric seat 14 is formed in the body 11 and is adapted to accommodate, in this case detachably, as explained hereinafter for the other configurations, a frame 17 for supporting means for internal elastic anchoring to an air intake or means for coupling to the intake of a ventilation duct.

[0018] Two fixing holes 15 for screws of screw anchors or equivalent wall fixing means, not shown, are formed in the body 11 in mutually opposite positions; said holes must be converted into through holes by the user.

[0019] With particular reference to figure 6, a different

embodiment comprises an insect-blocking mesh 16 that is interposed, on demand, between the body 11 and said frame 17 for the anchoring means, which in this case is adapted to retain the mesh 16 as well.

[0020] The frame 17 is retained in the seat 14 through a flexible raised portion 14a of the edge of said seat.

[0021] With particular reference to figures 7 to 11, in a second configuration of the grille, in addition to the body 11 described above, there is also provided a first anchoring device, generally designated by the reference numeral 18.

[0022] The first anchoring device 18 comprises said frame 17, which is accommodated in the seat 14 upon assembly and is provided with a diametrical stiffening cross-member 20 and with two stiffening cross-members 21 that are perpendicular thereto.

[0023] Two tabs 22 protrude at right angles where the diametrical cross-member 20 and the cross-members 21 intersect, and two coaxial through holes 23 are formed in said tabs; corresponding lateral arms 24 are pivoted in said through holes and protrude from an anchoring element 25.

[0024] In this manner, the anchoring element 25 is articulated along one edge with respect to the frame 17.

[0025] Furthermore, the median region of a metallic lamina 26 is embedded and/or inserted at the free end of the anchoring element 25; its radial free ends 27 are adapted to anchor inside the ventilation intake, which is not illustrated.

[0026] Furthermore, a central arm 28 protrudes from the anchoring element 25 and is interposed between the two lateral arms 24; its free end 29 interferes slightly during rotation and rests on the diametrical cross-member 20 which, by being flexible, produces a removable locking of said anchoring element 25 in an inactive position or in an active position.

[0027] An abutment tooth 30 protrudes in this case from the frame 17 and is adapted to fit in one of the diametrically opposite cavities 30a provided in the surface that forms the seat 14.

[0028] With particular reference to figures 12 to 16, a ventilation grille for air intakes according to the invention comprises, in a third embodiment, an annular body 301, in this case a square one, with which a plurality of parallel and spaced vanes 302 is monolithic.

[0029] The body 301 is produced by cutting and plastic deformation from metal plate.

[0030] In this third embodiment, the grille comprises a plastic frame 303, such as the one previously designated by 17, in which the perimetric part 304 is accommodated and fixed (by seaming) in a seat 305 formed by a perimetric folded edge 306 of the body 301.

[0031] Furthermore, a mesh 307 is interposed between the frame 303 and the body 301.

[0032] The anchoring device 18 described earlier can be rigidly coupled to the frame 303.

[0033] With particular reference to figures 17 to 21, a ventilation grille for air intakes according to the invention comprises, in a fifth embodiment, an annular body 401 that in this case is circular and with which a plurality of parallel and spaced vanes 402 is monolithic.

[0034] The body 401 is provided by cutting and plastic deformation from metal plate.

[0035] In this third embodiment, the grille 400 comprises a plastic frame 403 such as the one previously designated by 17, in which the perimetric part 404 is accommodated in a seat 405 formed by a partially folded perimetric edge 406 of the body 401.

[0036] Fixing is performed by folding back flaps 407 formed in the edge 406.

[0037] A mesh 408 is also interposed, in this case, between the frame 403 and the body 401.

[0038] The anchoring device 18 described earlier can be rigidly coupled to the frame 403.

[0039] In practice, it has been observed that the intended aim and objects of the present invention have been achieved.

[0040] In particular, it should be noted that the ventilation grille according to the invention can be easily preassembled by the retailer or by the user himself, and can adapt to the most disparate application requirements thanks to its multiple configurations.

[0041] Furthermore, a grille thus conceived does not require a plurality of production lines, since it is simply sufficient to produce the separate parts, which can be assembled in various ways.

[0042] It is also noted that the grille according to the invention has a solid and strong structure that can be easily applied in any situation and the filtering abilities whereof are absolutely competitive with respect to conventional grilles.

[0043] The present invention is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept; the details may furthermore be replaced with other technically equivalent elements.

[0044] The materials and the dimensions may be any according to the requirements.

[0045] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A ventilation grille for air intakes, comprising a circular or polygonal annular body (11) that is internally monolithic with a plurality of parallel and spaced vanes (12), and at least one stiffening element (13) that is arranged transversely to the vanes, a perimetric seat (14) being formed in said annular body and being adapted to accommodate a supporting

frame (17), means (18) for internal elastic anchoring to an air intake being accommodated inside said supporting frame, said means for elastic anchoring (18) comprising means (25, 26, 27) for coupling to the intake of a ventilation duct, **characterized in that** said anchoring means comprise a first anchoring device (18), constituted by said frame (17), which is accommodated with a snug fit, upon assembly, with its perimetric part in said seat (14) of said annular body and is provided with reinforcement cross-members (20, 21), two tabs (22) protruding from said frame (17), coaxial through holes (23) being provided in said tabs (22), corresponding lateral arms (24) being pivoted in said holes (23) and extending from an anchoring element (25) that is articulated along one edge.

2. The grille according to claim 1, **characterized in that** the median region of an elastic metallic lamina (26) is fixed to the free end of said anchoring element (25), its free ends (27) being anchored in the ventilation duct.

3. The grille according to claim 1, **characterized in that** a central arm (28) protrudes from said anchoring element (25) and is interposed between said lateral arms (24), its free end (29) interfering slightly, during the rotation of said anchoring element (25) about the hinges, with one of said reinforcement cross-members (20) that is flexible, a central arm (28), in association with the corresponding reinforcement cross-member (20), being adapted to removably lock said anchoring element (25) in an inactive position or in an active position.

4. The grille according to one or more of the preceding claims, **characterized in that** the perimetric edge of said seat comprises a raised portion (14a).

5. The grille according to one or more of the preceding claims, **characterized in that** at least two through holes (15) are formed, in mutually opposite positions, in said body (11) and are adapted for the application of screw anchors or equivalent wall fixing means.

6. The grille according to one or more of the preceding claims, **characterized in that** it comprises a mesh (16) that is interposed between said annular body (11) and said frame (17) with a perimetric part to be accommodated with a snug fit in said perimetric seat (14) of said body (11).

Patentansprüche

1. Lüftungsgitter für Lufteinlässe, umfassend einen runden oder polygonalen ringförmigen Körper (11), der innen mit einer Mehrzahl von parallelen und im Abstand angeordneten Rippen (12) monolithisch ist, sowie mindestens ein Versteifungselement (13), das quer zu den Rippen angeordnet ist, wobei ein Umfangssitz (14) im ringförmigen Körper ausgebildet und angepasst ist, um einen Halterahmen (17) unterzubringen, wobei innerhalb des Halterahmens Mittel (18) zur inneren elastischen Verankerung an einem Lufteinlass untergebracht sind, wobei die Mittel (18) zur elastischen Verankerung Mittel (25, 26, 27) zum Verbinden mit dem Einlass eines Lüftungskanals sind, **dadurch gekennzeichnet, dass** die Verankerungsmittel eine erste Verankerungsvorrichtung (18) umfassen, die von dem Rahmen (17) gebildet wird, der beim Zusammensetzen mit seinem Umfangsteil mit einer engen Passung im Sitz (14) des ringförmigen Körpers untergebracht wird und mit Verstärkungsquerträgern (20, 21) versehen ist, wobei zwei Lappen (22) aus dem Rahmen (17) überstehen, wobei koaxiale Durchgangsöffnungen (23) in den Lappen (22) vorgesehen sind, wobei entsprechende seitliche Arme (24) in den Öffnungen (23) schwenkbar sind und sich aus einem Verankerungselement (25) erstrecken, das entlang eines Randes gelenkig ist.

2. Gitter nach Anspruch 1, **dadurch gekennzeichnet, dass** der mittlere Bereich einer elastischen Metall-Lamelle (26) am freien Ende des Verankerungselements (25) befestigt ist, während seine freien Enden (27) im Lüftungskanal verankert werden.

3. Gitter nach Anspruch 1, **dadurch gekennzeichnet, dass** ein mittlerer Arm (28) aus dem Verankerungselement (25) übersteht und zwischen den seitlichen Armen (24) eingefügt ist, wobei sich sein freies Ende (29) während der Drehung des Verankerungselements (25) um die Drehgelenke leicht mit einem der Verstärkungsquerträger (20) überlagert, der flexibel ist, wobei ein mittlerer Arm (28) in Verbindung mit dem entsprechenden Verstärkungsquerträger (20) angepasst ist, um das verankerungselement (25) in einer inaktiven Stellung oder in einer sktiven Stellung lösbar zu arretieren.

4. Gitter nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der Umfangsrand des Sitzes einen erhöhten Teil (14a) aufweist.

5. Gitter nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** mindestens zwei Durchgangsöffnungen (15) an einander gegenüberliegenden Stellen im Körper (11) ausgebildet sind und zur Verwendung von Schraubankern oder äquivalenten Wandbefestigungsmitteln angepasst sind.

6. Gitter nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** es ein Netzgewebe oder Gitter (16) umfasst, das zwischen den ringförmigen Körper (11) und den Rahmen (17) eingefügt wird, wobei ein Umfangsteil mit einer engen Passung im Umfangssitz (14) des Körpers (11) unterzubringen ist.

Revendications

1. Grille de ventilation pour entrées d'air, comprenant un corps annulaire (11) circulaire ou polygonal de structure monolithique avec une pluralité d'ailettes parallèles et espacées (12), et au moins un élément rigidificateur (13) qui est agencé transversalement aux ailettes, un siège périmétrique (14) étant formé dans ledit corps annulaire et étant adapté, pour recevoir un cadre de support (17), un moyen (18) d'ancrage interne élastique à une entrée d'air étant logé à l'intérieur dudit cadre de support, ledit moyen d'ancrage élastique (18) comprenant un moyen (25, 26, 27) pour l'accouplement à l'entrée d'une conduite de ventilation, **caractérisée en ce que** ledit moyen d'ancrage comprend un premier dispositif d'ancrage (18), constitué dudit cadre (17), qui est mis en place avec un ajustement serré, lors de l'assemblage, avec sa partie périmétrique dans ledit siège (14) dudit corps annulaire et est muni d'éléments de renfort transversaux (20, 21), deux pattes (22) faisant saillie dudit cadre (17), des trous traversants coaxiaux (23) étant réalisés dans lesdites pattes (22), des bras latéraux correspondants (24) étant montés à pivotement dans lesdits trous (23) et s'étendant à partir d'un élément d'ancrage (25) qui est articulé le long d'un bord.

2. Grille selon la revendication 1, **caractérisée en ce que** la région médiane d'une lamelle élastique métallique (26) est fixée à l'extrémité libre dudit élément d'ancrage (25), ses extrémités libres (27) étant ancrées dans la conduite de ventilation.

3. Grille selon la revendication 1, **caractérisée en ce qu'**un bras central (28) fait saillie sur ledit élément d'ancrage (25) et est intercalé entre lesdits bras latéraux (24), son extrémité libre (29) coopérant légèrement, pendant la rotation dudit élément d'ancrage (25) autour des charnières, avec l'un desdits éléments de renfort transversaux (20) qui est souple, un bras central (28), en association avec l'élément de renfort transversal correspondant (20), étant adapté pour bloquer de manière détachable ledit élément d'ancrage (25) dans une position inactive ou dans une position active.

4. Grille selon l'une ou plusieurs des revendications précédentes, **caractérisée en ce que** le bord périmétrique dudit siège comprend une partie saillante (14a).

5. Grille selon l'une ou plusieurs des revendications précédentes, **caractérisée en ce qu'**au moins deux trous traversants (15) sont formés, dans des positions mutuellement opposées, dans ledit corps (11) et sont conçus pour l'application d'éléments de fixation à visser ou de moyens de fixation murale équivalents.

6. Grille selon l'une ou plusieurs des revendications précédentes, **caractérisée en ce qu'**elle comprend un filet (16) qui est intercalé entre ledit corps annulaire (11) et ledit cadre (17) avec une partie périmétrique destinée à être logée, avec un ajustement serré, dans ledit siège périmétrique (14) dudit corps (11).

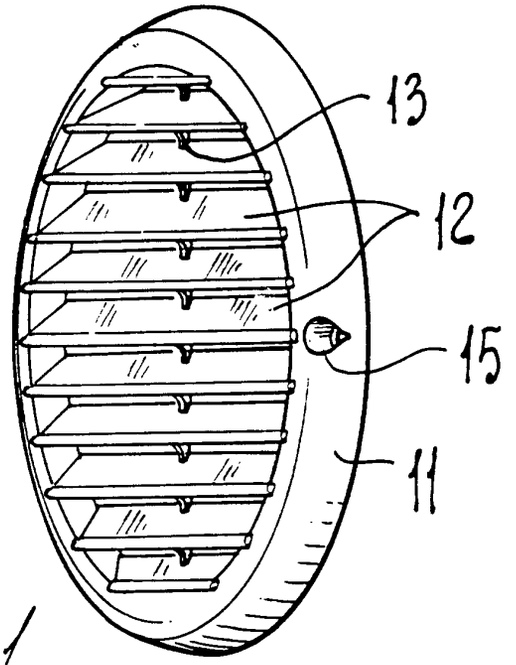


Fig. 1

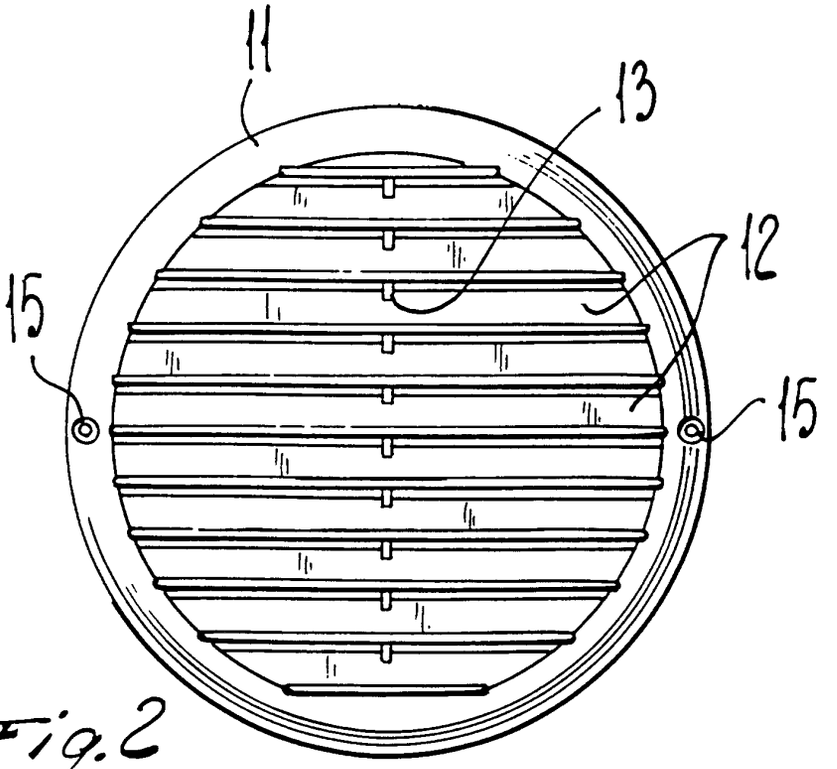


Fig. 2

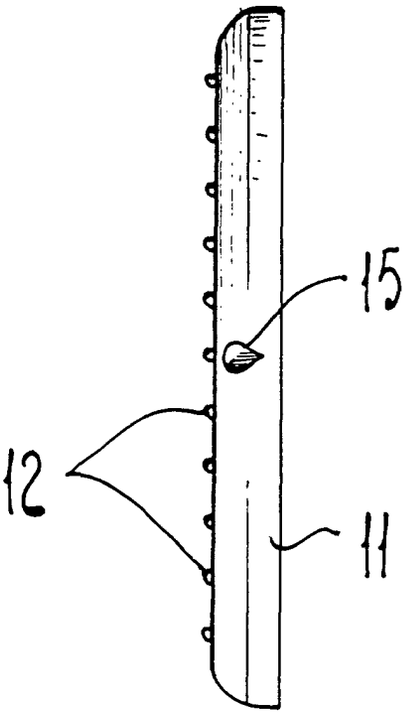


Fig. 3

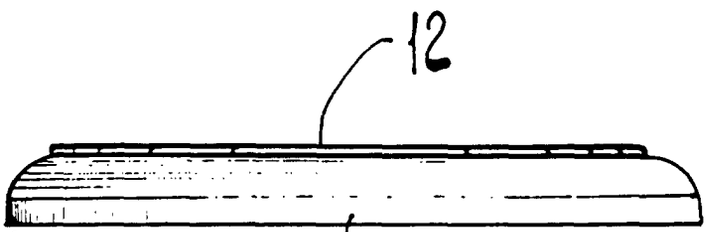


Fig. 4

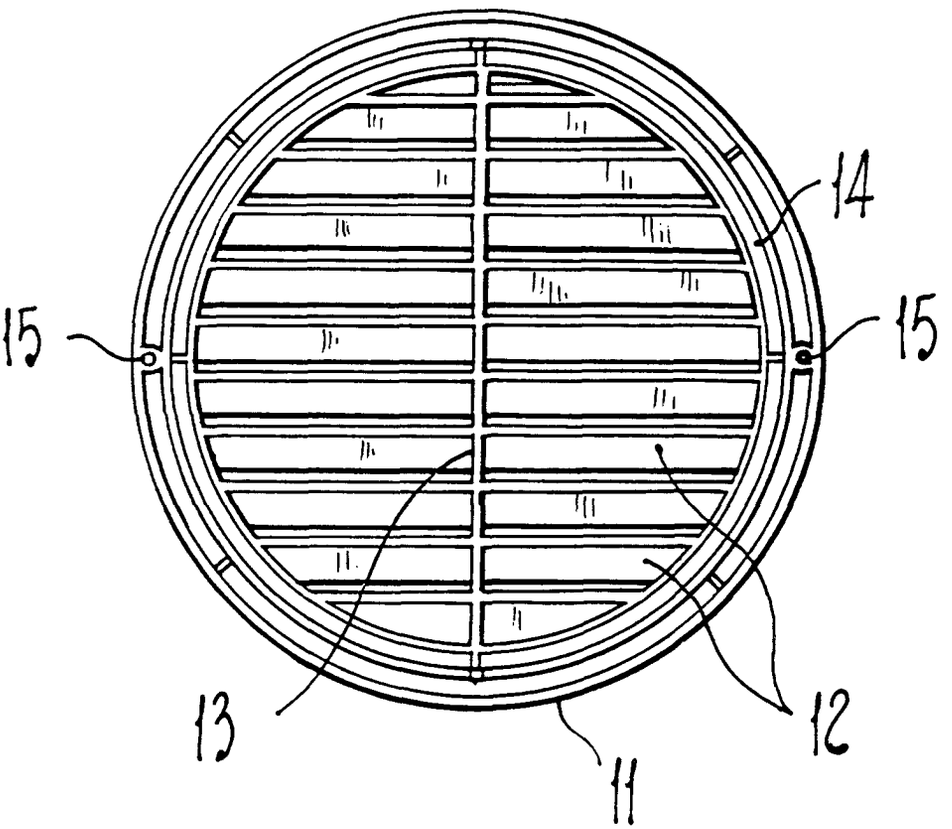


Fig. 5

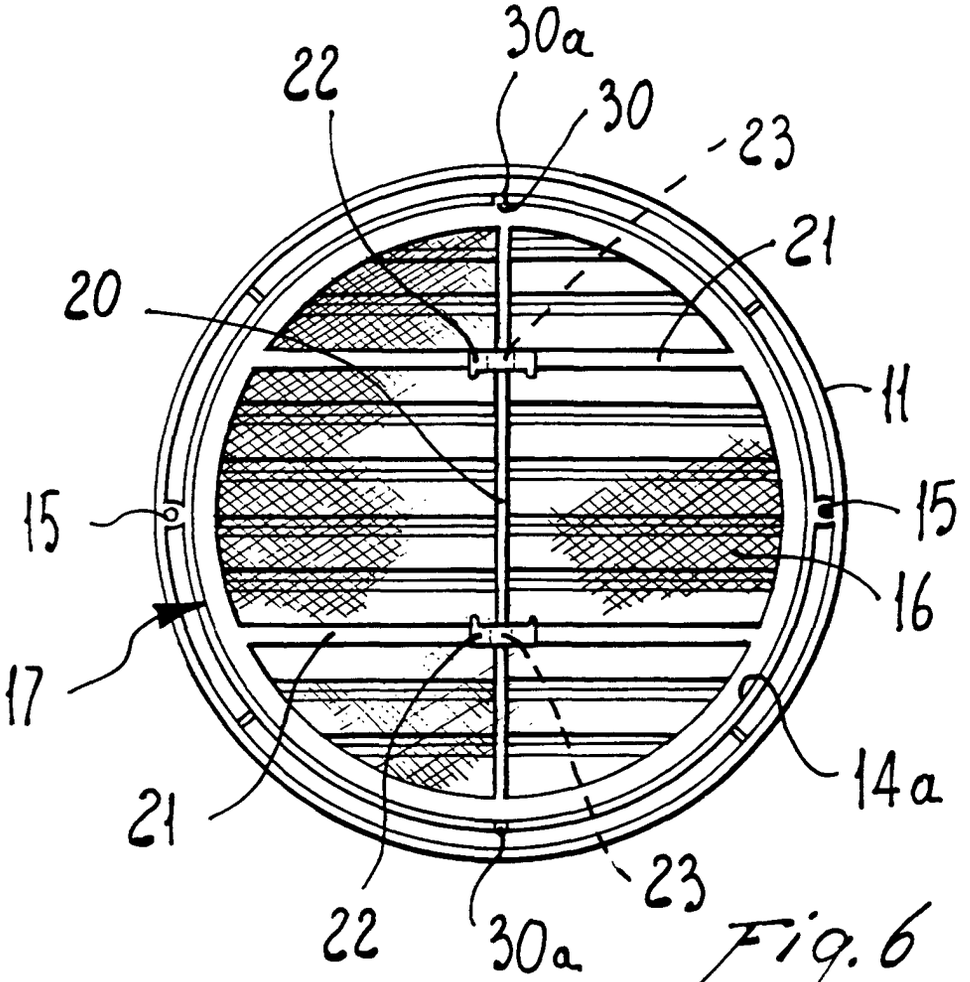

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Fig. 6

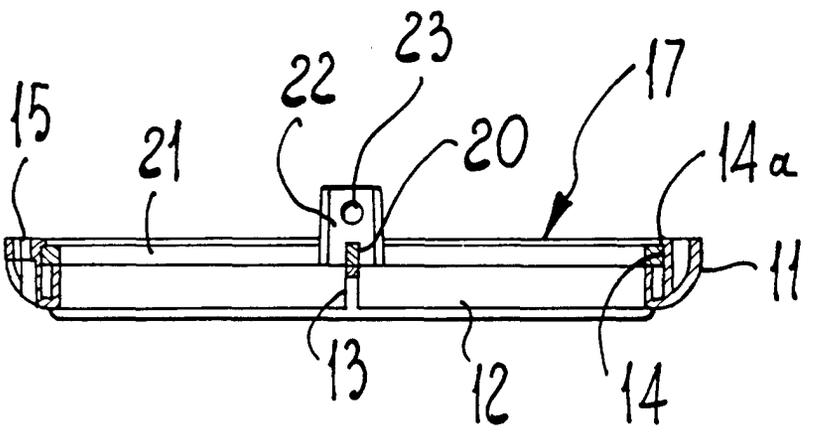

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Fig. 6a

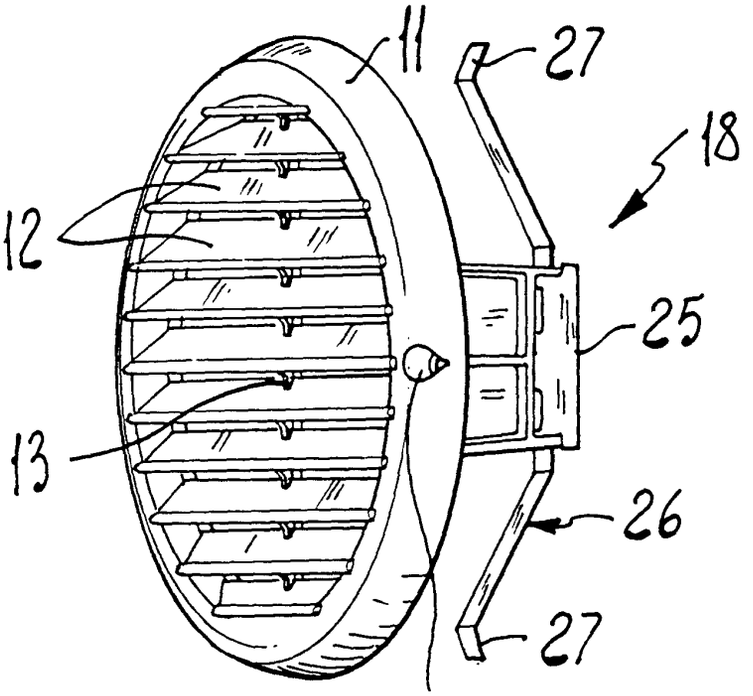


Fig. 7

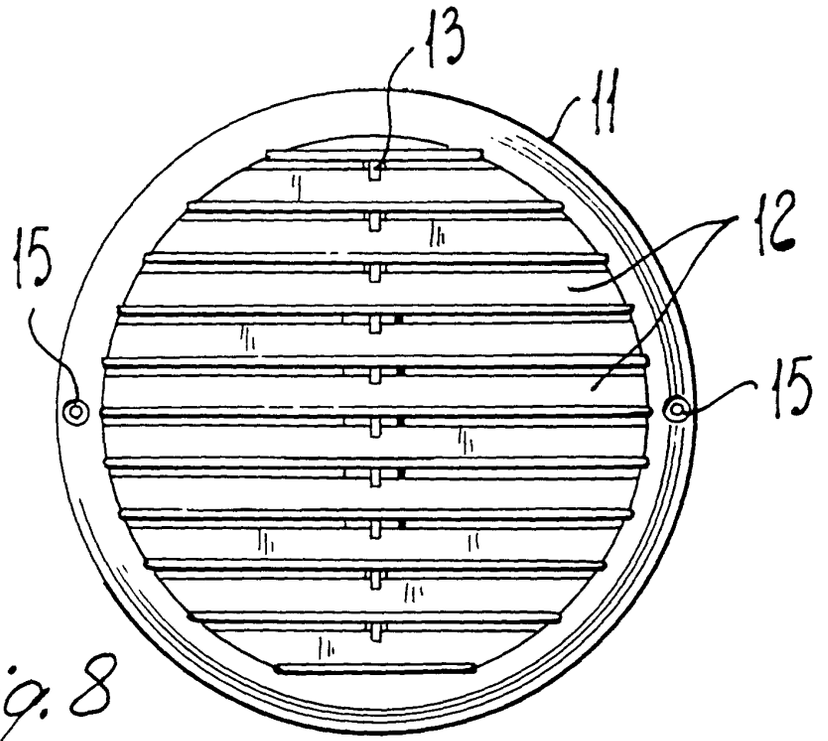


Fig. 8

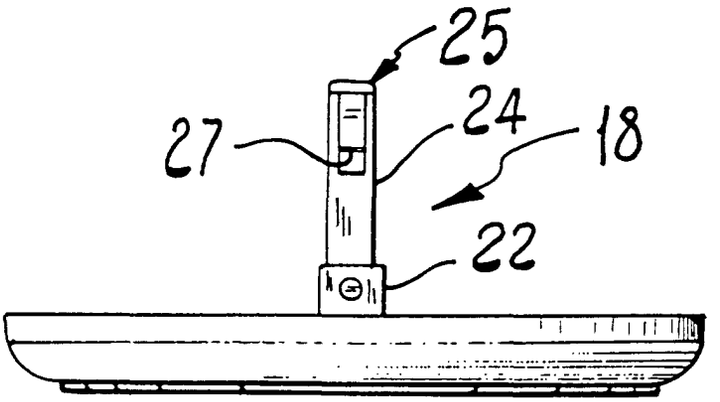


Fig. 9

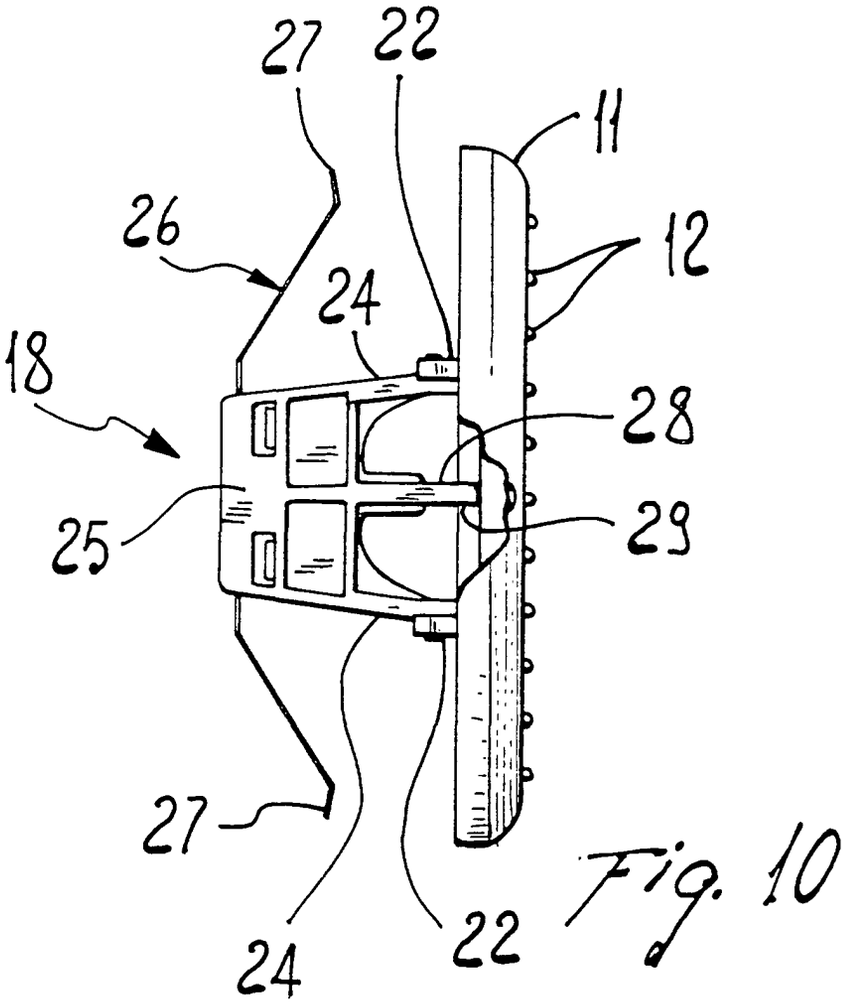


Fig. 10

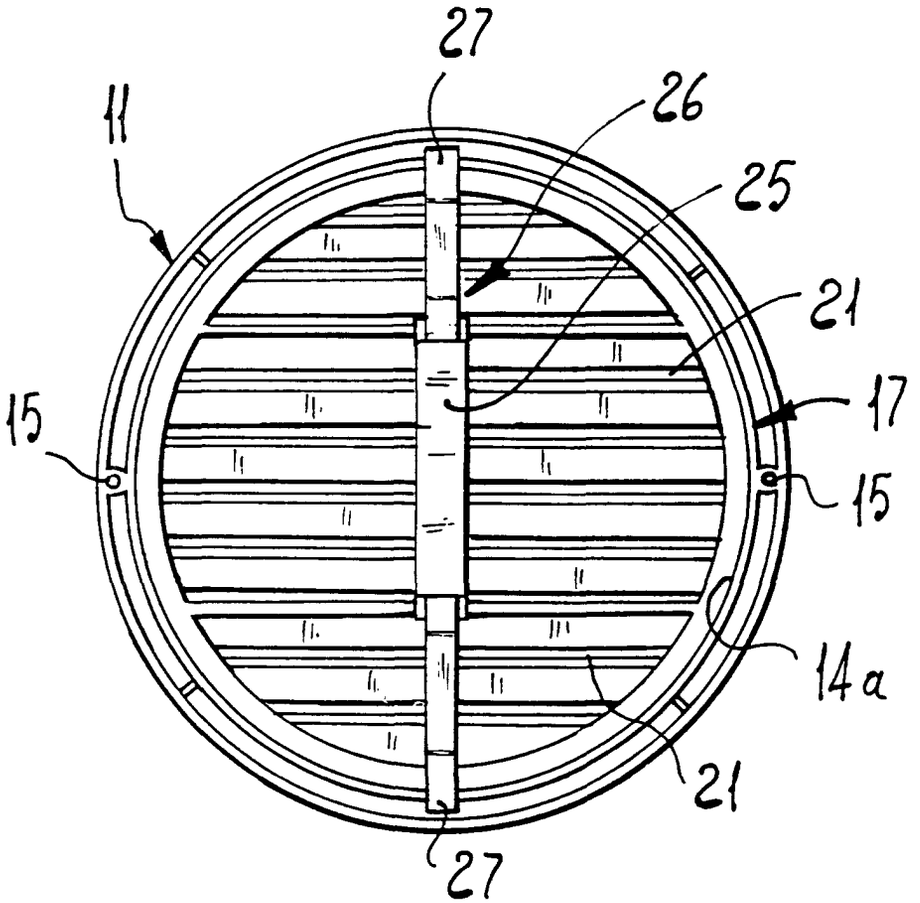


Fig. 11a

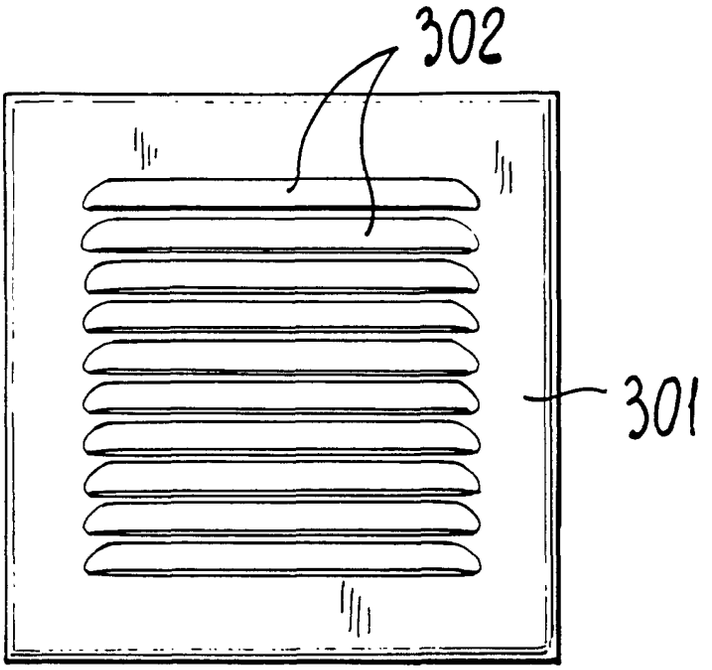


Fig. 12

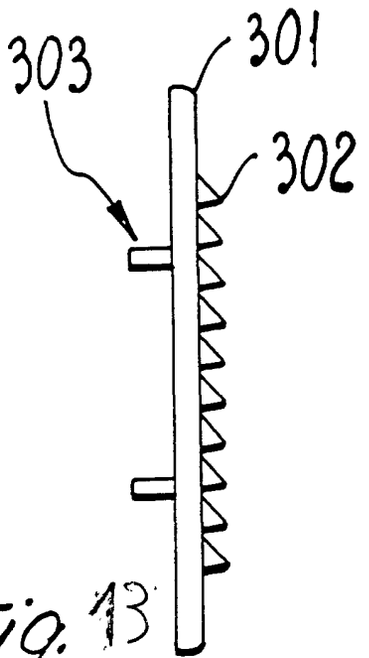


Fig. 13

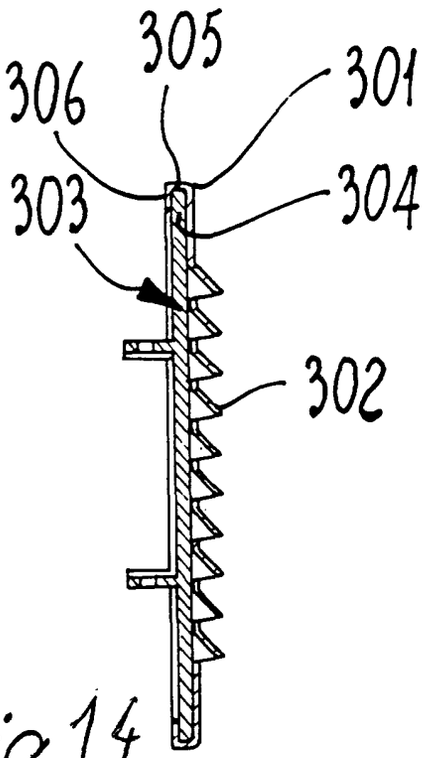


Fig. 14

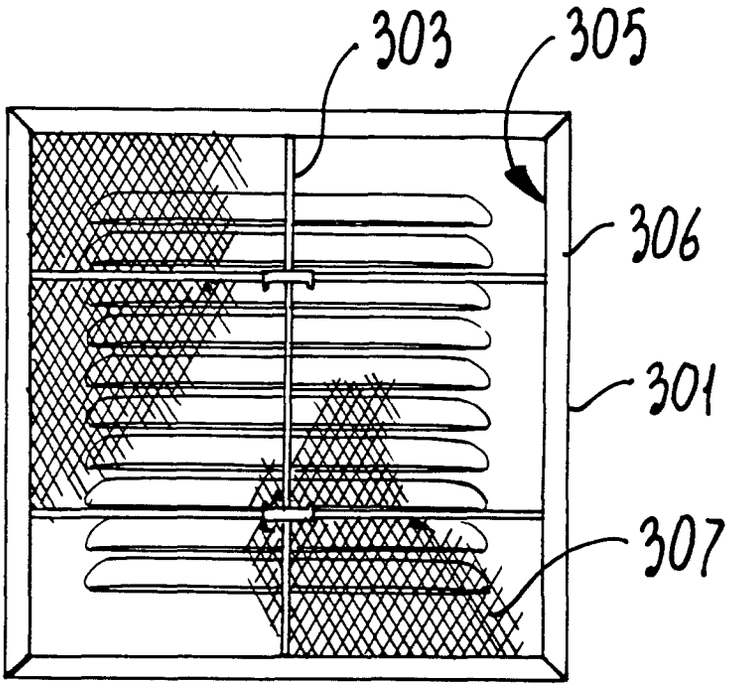


Fig. 15

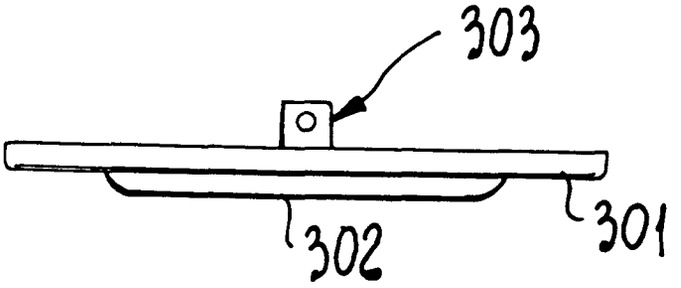


Fig. 16

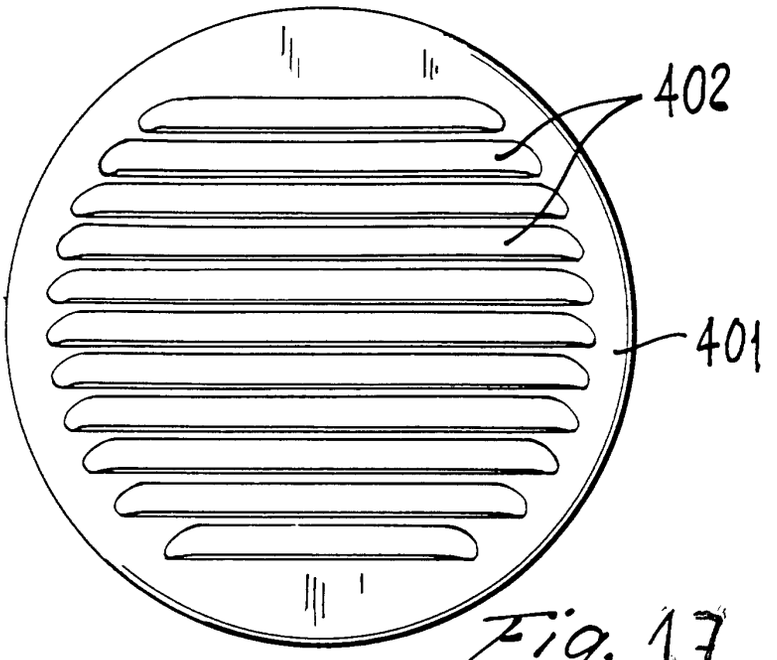


Fig. 17

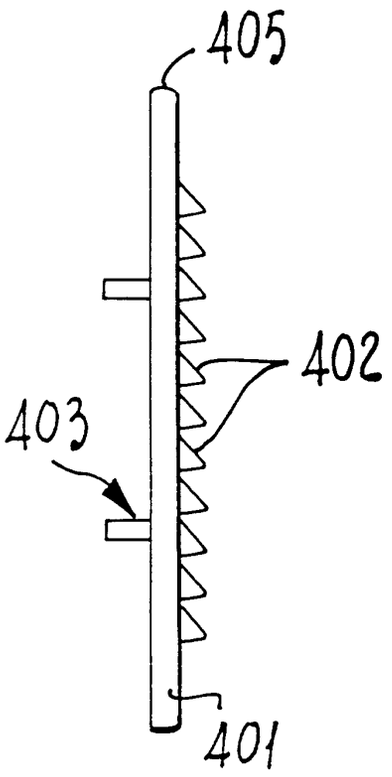


Fig. 19

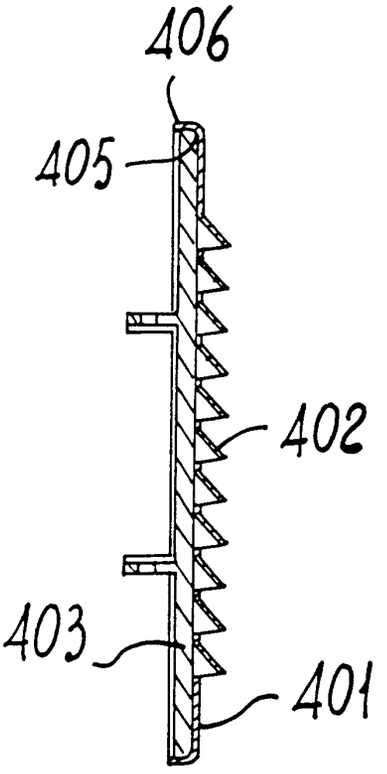


Fig. 18

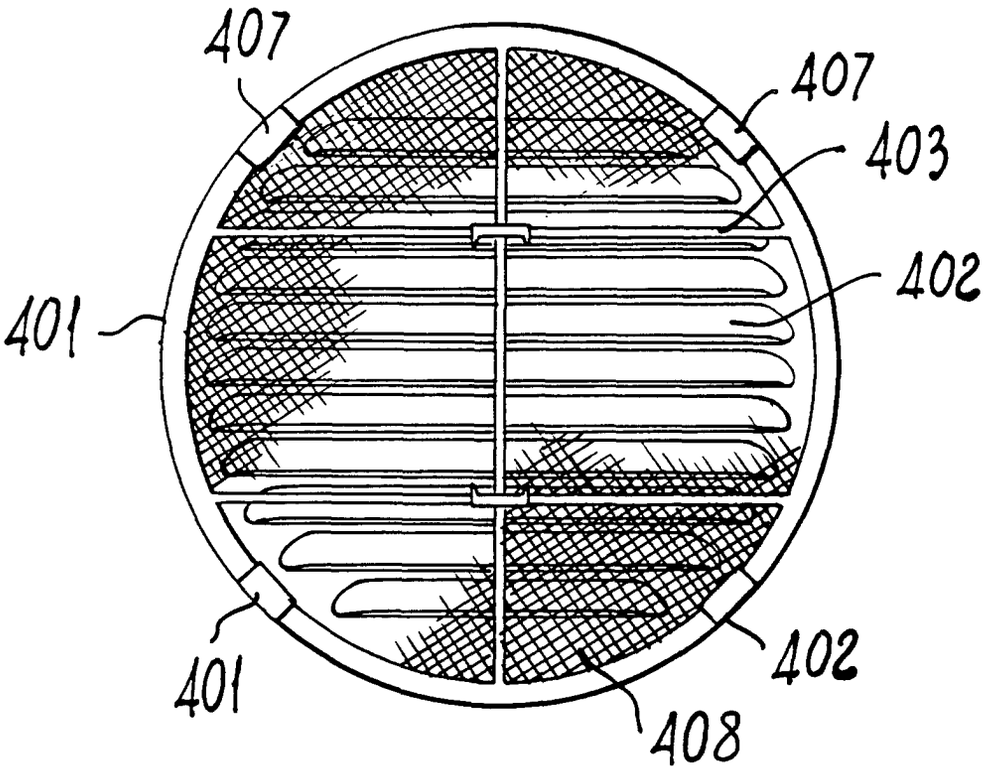


Fig. 20

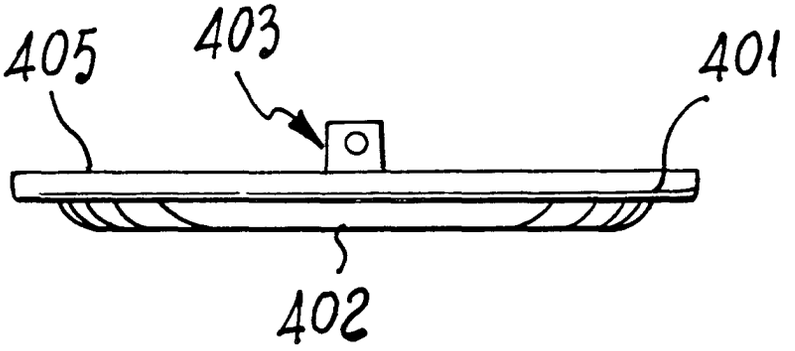


Fig. 21