(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 546 845 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.10.2019 Bulletin 2019/40

(51) Int Cl.:
F24F 13/062 *(2006.01)*

(21) Application number: **19166229.5**

(22) Date of filing: **29.03.2019**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **29.03.2018 US 201862650172 P**

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(54) AIR DIFFUSER AND METHOD FOR ASSEMBLING THE SAME

(57) The present invention is directed to an air diffuser and a method of assembling the same. The air diffuser provides an air flow with an angular direction with respect to a vertical plan. The air diffuser may be made of different sections configured, when assembled, to direct and disperse the air all around the room or preferably a large area such a warehouse or the like.

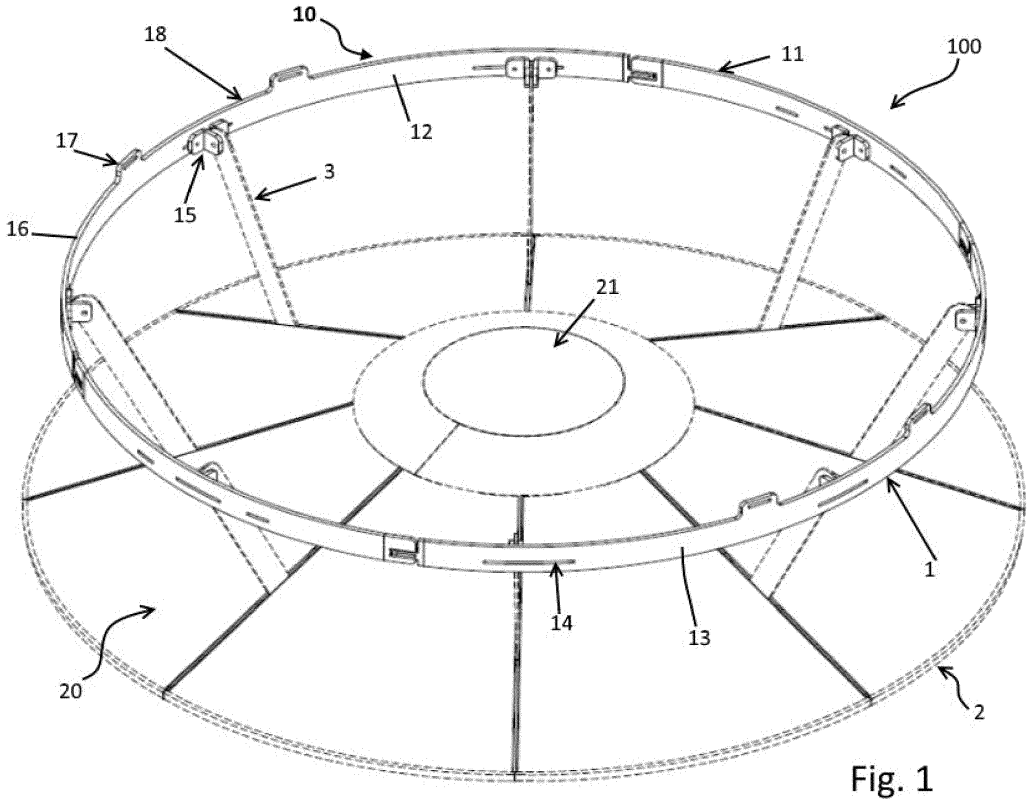

Fig. 1

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Description

Cross-Reference to Related Applications

[0001] The present patent application claims the benefits of priority of United States Provisional Patent Application No. 62/650,172, entitled "Air diffuser and method for assembling the same", and filed at the United States Patent and Trademark Office on March 29, 2018, the content of which is incorporated herein by reference.

Field of the Invention

[0002] The present invention generally relates to system and method for diffusing air. More specifically, the present invention relates to system and method for diffusing air of ventilation units producing large debit of air.

Background of the Invention

[0003] Air diffusers adapted for directing and dispersing air or other compressible fluids are well known in the art. Such air diffusers are generally configured to be integrated to ceilings or to ventilation systems. Typically, a diffuser comprises different layers of louvered surfaces or comprises vanes permanently attached one to the other. Such surfaces or vanes are generally configured to direct and disperse the air throughout a room or an area.

[0004] Existing air diffusers are generally configured to receive low debit airflow, such as airflow from a residential or commercial building ceiling duct. Such solutions are not designed to resist to important airflow debit from larger fans such as industrial fans found in large warehouses or farming buildings.

[0005] An apparatus for a discharge vent on an air circulation system including structures for controlling the direction and quantity of airflow is disclosed in the US patent no. patent 6,554,880. Preferred methods for assembling and using the apparatus are also disclosed. Such design aims at providing an air flow adjustability for the convenience and comfort of the occupants, it should also be easy to use and replace at reasonable price. Furthermore, the apparatus disclosed slidable panels configured to control air flow through a vertical direction with regard to the ceiling.

[0006] There is thus a need for an improved air diffuser especially for use with medium or large debit fans such as those used for ceiling diffusers for a large warehouse, farms or the like.

Summary of the Invention

[0007] The shortcomings of the prior art are generally mitigated by providing an air diffuser having a general conical shape and comprising attachment means adapted to attach to a fan or ventilator. Such air diffuser is adapted to direct airflow about the inclined surface of the air diffuser.

[0008] In another aspect of the present invention, an air diffuser with at least one sloped area to guide the air coming from a duct is provided.

[0009] In another aspect of the present invention, an air diffuser adapted to disperse the air throughout a large room such as a warehouse or the like is provided.

[0010] In a further aspect of the present invention, an air diffuser adapted to be easily assembled and adjusted when needed is provided.

[0011] In yet another aspect of the present invention, an air diffuser adapted to avoid vertical air flow blowing with regard to the ceiling when mounted to a fan is provided.

[0012] In another aspect of the present invention, an air diffuser for an airflow producing at least 5,000 cubic feet per minute (CFM) is provided. The air diffuser comprises a reflecting member maintained at a fixed distance from a source of the airflow. The reflecting member further comprises a reflecting surface having an outer periphery, the reflecting surface being inclined with regard to the direction of the airflow and being adapted to direct the airflow toward all directions of the outer periphery at angle being function of the inclination of the reflecting surface.

[0013] The reflecting surface may comprise an aperture adapted to let at least a portion of the airflow through the air diffuser.

[0014] The air diffuser may further comprise a covering member adapted to mate the general shape of a top portion of the reflecting surface and to cover at least a portion of the aperture.

[0015] The reflecting member may further comprise a plurality of reflecting sections adapted to be mounted to each another to form the reflecting surface. The reflecting member may have a frustoconical shape or each reflecting member may be shaped as section of the frustoconical shape of the reflecting member. Each reflecting section may comprise a male portion, a female portion, an outer side and an inner side, the female side of a first reflecting section may be adapted to receive the male side of a second reflecting section.

[0016] Each reflecting section may comprise two side walls angled according to the inclination of the reflecting member and an outer wall forming a portion of the periphery of the reflecting member.

[0017] The air diffuser may further comprise an attachment mechanism adapted to attach the reflecting member to the airflow source. The attachment mechanism may further comprise a plurality of linking members, each linking member being adapted to be mounted at a first end to the airflow source and at a second end to the reflecting member. Each first end of the linking members may be adapted to be attached to the airflow source.

[0018] The inclination of the reflecting member may be between about 10 and 40 degrees.

[0019] The air diffuser further may further comprise a bottom covering member adapted to cover an opening formed by a bottom surface of the redirecting member.

[0020] In another aspect of the present invention, an air diffuser for an airflow is provided. The air diffuser comprises a reflecting member maintained at a fixed distance from a source of the airflow. The reflecting member further comprises a reflecting surface having an outer periphery, the reflecting surface being inclined with regard to the direction of the airflow and being adapted to direct the airflow toward all directions of the outer periphery at angle being function of the inclination of the reflecting surface, the reflecting surface comprising an aperture adapted to let at least a portion of the airflow through the air diffuser. The reflecting member further comprises a plurality of reflecting sections adapted to be mounted to each another to form the reflecting surface.

[0021] The reflecting member may have a frustoconical shape, each reflecting member being shaped as a section of the frustoconical shape of the reflecting member. Each reflecting section may further comprise an inner wall shaped to form a section of a periphery the aperture.

[0022] The air diffuser may further comprise an attachment mechanism adapted to attach the reflecting member to the airflow source. The attachment mechanism may further comprise a plurality of linking members, each linking member being adapted to be mounted at a first end to the airflow source and at a second end to the reflecting member.

[0023] The air diffuser further may further comprise a plurality of bottom covering members adapted to cover a bottom surface of the redirecting member, each covering member being shaped to cover a bottom surface of at least one of the reflecting sections.

[0024] Each covering member may comprise an inner wall, each inner wall being shaped to form a section of a periphery a bottom aperture to let air pass through the diffuser.

[0025] The air diffuser may further comprise a structure adapted to attach the reflecting sections to one another.

[0026] In yet another aspect of the present invention, a method of diffusing air of from a large airflow source is provided. The method comprises assembling a plurality of redirecting sections to form a redirecting surface inclined with regard to the direction of the airflow source and having a periphery, maintaining the formed redirecting surface at a predetermined distance from a source of the airflow, blowing an airflow from the airflow source toward the formed redirecting surface and redirecting the airflow toward all directions of the outer periphery at angle being function of the inclination of the reflecting surface.

[0027] The method further may further comprise letting at least a portion of the airflow passing through the reflecting surface and/or the assembling of the redirecting sections forming a frustoconical redirecting surface.

[0028] Other and further aspects and advantages of the present invention will be obvious upon an understanding of the illustrative embodiments about to be described or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

Brief Description of the Drawings

[0029] The above and other aspects, features and advantages of the invention will become more readily apparent from the following description, reference being made to the accompanying drawings in which:

Figure 1 is a top perspective view of an embodiment of an air diffuser in accordance with the principles of the present invention.

Figure 2 is a front/side elevation view of the air diffuser of Figure 1.

Figure 3 is a bottom view of the air diffuser of Figure 1.

Figure 4 is a top view of the air diffuser of Figure 1.

Figure 5 is a front/side exploded elevation view of the air diffuser.

Figure 6 is an exploded perspective view of the air diffuser.

Figure 7 is an illustration of an air flow circulation simulation of an embodiment of the air diffuser in accordance with the principles of the present invention.

Figure 8 is a top perspective view of a second embodiment of an air diffuser in accordance with the principles of the present invention.

Figure 9 is a front/side elevation view of the air diffuser of Figure 8.

Figure 10 is a bottom view of the air diffuser of Figure 8.

Figure 11 is a top view of the air diffuser of Figure 8.

Figure 12 is an exploded perspective view of the air diffuser of Figure 8.

Detailed Description of the Preferred Embodiment

[0030] A novel air diffuser and method for assembling the same will be described hereinafter. Although the invention is described in terms of specific illustrative embodiments, it is to be understood that the embodiments described herein are by way of example only and that the scope of the invention is not intended to be limited thereby.

[0031] Now referring to Figure 1, an embodiment of air diffuser 100 is shown. The air diffuser 100 comprises a

reflecting member 2 adapted to receive and reflect air from an airflow source (not shown), such as a duct or a fan, the duct or fan being adapted to blow air toward the surface 2 of the air diffuser 100. Even if the present description generally refers to a circular fan or duct, one skilled in the art shall understand that the present invention is not limited to a general airflow source shape. Also, one skilled in the art shall understand that the air diffuser 100 in accordance with the present invention may work in combination with any type of airflow source. In typical embodiments, the airflow source may provide a debit ranging from 5,000 to 80,000 CFM.

[0032] Now referring to Figures 1 to 6, in some embodiments, the reflecting member 2 has a general frusto-conical shape having a closed top portion.

[0033] Now referring to Figure 5, in yet some embodiments, the top portion of the reflecting member 2 may comprise an aperture 228 adapted to let at least a portion of the airflow through the air diffuser 100. The size of such aperture 228 may be adapted to divide the airflow from the airflow source between air to be diffused and air to pass through the air diffuser 100 (direct airflow). In such an embodiment, the diameter of the aperture 228 is inferior than the diameter d_1 of the base portion of the reflecting member 2. Understandably, the shape of the optional aperture 228 is not limited to any particular shape. Indeed, the shape of the said aperture 228 may allow only portion of the airflow to pass through the air diffuser 100

[0034] Referring now to Figure 2, a side view of air diffuser 100 is shown. In such embodiments, the diameter d_1 may range between 3 and 10 feet. In yet other embodiments, the diameter d_1 may be equal or superior to the diameter of the source of airflow, such as the fan. Understandably, in embodiments where the airflow source is not circular, the area covered by the reflecting member 2 must be equal or superior to the area of the airflow source and the diameters must be adapted with width, depth or length of the reflecting member 2.

[0035] In other embodiments (not shown), the largest width of the reflecting member 2 is equal or superior to the largest of width or length of the source of airflow outlet, such as the duct or the fan.

[0036] In yet other embodiments, the air diffuser 100 may be made of rigid or semi-rigid material, such as but not limited to metal or plastic. More particularly, the reflecting member 2 or its components may be made of light yet rigid material such as plastic.

[0037] Now referring to Figures 1 to 6, in some embodiments, the reflecting member 2 has a general frusto-conical shape having a closed top portion. In yet some embodiments, the top portion of the reflecting member 2 may comprise an aperture 228 adapted to let at least a portion of the airflow through the air diffuser 100. The size of such aperture 228 may be adapted to divide the airflow from the airflow source between air to be diffused and air to pass through the air diffuser 100 (direct airflow).

[0038] Referring back to Figures 1 to 6, understandably, the shape of the reflecting member 2 is not limited to a conical or frusto-conical shape. In other embodiments, the reflecting member 2 could be generally shaped as a pyramid, a frusto-pyramidal shape or any other sloped or slanted shape surface allowing the air from the airflow to contact the reflecting member 2 at an angle.

[0039] The reflecting member 2 is inclined or angled with regard to the airflow direction about an angle α_2. The angle α_2 typically ranges between about 10 degrees and about 40 degrees.

[0040] In embodiments comprising an aperture 228, the air diffuser 100 may further comprise a covering member 21. The covering member 21 is generally shaped to mate the general shape of the reflecting member 2 and to cover at least a portion of the aperture 228. As an example, as shown in Figure 2, in embodiments having a surface shaped as a frusto-cone, the covering member 21 has a frusto-conical shape having a top diameter d_2 at least equal to the diameter of the aperture 228. In embodiments comprising a base portion 24, the base portion 24 of the frusto-conical covering member 21 comprises an aperture 248 to mate with the shape of the reflecting member 2 (see Figure 5). In other embodiments, when assembled, the aperture 248 is generally coaxial or coincident with the aperture 228 of the reflecting member 2.

[0041] The covering member 21 may be inclined or angled with regard to the airflow direction about an angle α_1. The angle α_1 typically ranges between about 10 degrees and 40 degrees. In a preferred embodiment, the angles α_1 and α_2 are equal or about the same.

[0042] In some embodiments, the diameter d_1 is linked to the angle α_1 or α_2. In a preferred embodiment, the relation between diameter d_1 and the angle α_1 or α_2 follows the following: α_1 = 21.8° and d_1 = 84". Thus, the angle α_1 may be adapted with regard to the diameter d_1 and vice-versa.

[0043] In some embodiments, the reflecting member 2 may further be made of a plurality of sections 20. Each section 20 is adapted to be mounted to each another to form the reflecting member 2. In a preferred embodiment, each section 20 has a general triangular shape, pie shape or frusto-pie shape. In a preferred embodiment the side walls 221 of each section 20 are substantially perpendicular to the bottom wall 224.

[0044] Now referring to Figure 6, in embodiments in which the reflecting member 2 comprises an aperture 228 and a plurality of sections 20, each section 20 comprises two side walls 221 being sloped according to the angle of the reflecting member 2, an inner wall 224 being shaped as a portion of the periphery of the aperture 228 and an outer wall 220 forming a portion of the periphery of the reflecting member 2.

[0045] The embodiments comprising a plurality of sections 20 generally aim at facilitating transport of the air diffuser 100 from a place or location to another. In yet other embodiments, each section 20, when dismantled, may be adapted to be inserted or combined to another

section 20. Such configuration generally aims at reducing the volume of the different section and to reduce transportations costs.

[0046] In embodiments in which the top surface of the reflecting member 2 comprises a closed top surface, either being flat or curved, each of the inner wall 224 of each section 20 is adapted to form a top enclosure adapted to reflect the airflow.

[0047] The air diffuser 100 may further comprise a structure 23 adapted to attach the sections 20 to one another. In a preferred embodiment, the structure 23 comprises a plurality of bracket members 230 mounted one to another to form ribs adapted to receive each of the sections 20. In some embodiments, the bracket members 230 may be shaped to mate with the shape of the side wall 221 of each section 20.

[0048] In a preferred embodiment, the air diffuser 100 may further comprises a central attachment structure 27 adapted to mount the bracket members 230 to form a desired structure. The attachment structure 27 may comprise or be formed of a central aperture 271 allowing air to pass through the air diffuser 100. The attachment structure 27 may further comprise attachment brackets 270 adapted to attach to the bracket members 23. The central aperture 271 may further be adapted to attach each of the attachment brackets 270 together. In a preferred embodiment, the central aperture has a circular shape. Understandably, the central aperture 271 may be shaped or adapted according to the needs of the bracket members 23.

[0049] In some embodiments, each bracket 23 is T-shaped and is adapted to mate with the side walls 221 of two sections 20. In other embodiments, the bracket member 230 may be adapted to attach to the bottom walls of two sections 20.

[0050] Understandably, the bracket member 230 may be attached to sections 20 using any means known in the art. The bracket 230 may comprise a surface 231 adapted to receive a plurality of apertures configured to be similarly positioned and dimensioned to aperture that may be present on the side wall 221 of one of the sections 20.

[0051] Still referring to Figure 1 to 6, the air diffuser 100 further generally comprises an airflow source attachment means 1. The airflow source attachment means 1 allows the reflecting member 2 to be fixedly attached to the airflow source. In some embodiments, the airflow source attachment means 1 is embodied as an attachment member 10 shaped to mate with the general shaped of the airflow source. As an example, the attachment member 10 may be shaped as a ring adapted to attach to generally circular industrial fans.

[0052] In yet other embodiments, the attachment member 10 may further comprise male segments 18 and female segments 11. Each segment 18 and 11 may comprise an inner radial surface 12, an outer radial surface 13 and two substantially parallel side surfaces 16. The male segment 18 and the female segment 11 may further be adapted to be preferably pivotally attached at their junctions.

[0053] The attachment member 10 may further comprise one or more protruding portions 17 adapted to attach the said attachment member 10 to the airflow source using any fasteners or any other method known in the art.

[0054] The air diffuser 100 may further comprise a linking member 3 adapted to be mounted, at one end, to the reflecting member 2 and, at another end, to the airflow source attachment mean 1. In a preferred embodiment, as shown in Fig. 6, the linking member 3 is embodied as a longitudinal linking member 30 adapted to be attached, preferably a first end 31,to a bracket member 230 or, preferably, to the attachment structure 27. In such an embodiment, the other end 32 of the linking member 30 is attached to the attachment mean 1. The linking member 30 is generally attached at an angle generally aiming at increasing the stability of the air diffuser 100 when mounted. The linking member 30 may further aim at reducing the difference between the diameter or size of the airflow source attachment member 1 and of the attachment structure 27.

[0055] In some embodiments, the air diffuser 100 may further comprise a bottom covering member 24 adapted to close or cover the bottom end of the air diffuser 100. In some embodiments, the bottom covering member 24 is adapted or shaped to at least reduce the turbulences created by the air flow passing through the air diffuser 100.

[0056] In a preferred embodiment, the covering member 24 is made of different sections 240 being shaped to mate with the bottom wall of the sections 20 of the reflecting member 2. The covering member 24 may further comprise an inner surface 241 and an outer surface 242. The inner surface 241 is generally configured to mate with the bottom wall 224.

[0057] Understandably, the resulting shape of the bottom covering member 24 may comprise an aperture to let air pass through the diffuser.

[0058] In another embodiment, the air diffuser 100 may further comprise a detachable central bottom covering member 26 to cover the aperture formed by the bottom covering member 24 and thus block air to go through the central aperture of the air diffuser 100.

[0059] In yet other embodiments, the covering members 24 may further comprise one or more aperture 244. Such aperture is generally use to install a lighting fixture or a lamp.

[0060] In another embodiment (not shown), the attachment member 1 and the reflecting member 2 may be integral.

[0061] In another embodiment (not shown), the airflow source is supported by a vertical supporting member, such as a pole or the like. In such embodiment, the air diffuser 100 comprises an aperture in the top portion of the reflecting member 2 to let the vertical supporting member through the diffuser 100. In such an embodiment, the covering member 24 may further comprise an

aperture 248 to let the vertical supporting member through. Typically, the vertical supporting member is rigidly attached to the ground or to a surface in order to support both the air diffuser 100 and the fan. Understandably, in such embodiments, the central bottom covering member 26 and covering member 21 may be removed or adapted to allow the passage of the vertical supporting member through the air diffuser 100.

[0062] Now referring to Figure 7, an example of a simulation of the airflow circulating through the air diffuser 100 is illustrated. Such simulation illustrates the general trajectory 40 of the airflow outputted from the source of airflow. As shown in Figure 7, the air flows around the periphery of the reflecting member 2, thus providing air circulation in all directions of a building, farm, warehouse and the likes. In embodiments where the reflecting member 2 has a generally circular shape, the air flows 360° around the reflecting member 2.

[0063] Now referring to Figure 8, a second embodiment of an air diffuser 300 is shown. The air diffuser 300 comprises a reflecting member 302 adapted to deflect airflow from an airflow source. In some embodiments, the air diffuser may comprise an attachment mechanism 303.

[0064] Now referring to Figures 8 to 12, in some embodiments, the reflecting member 302 has a general frusto-conical shape having a closed top portion. In yet some embodiments, the top portion of the reflecting member 302 may comprise an aperture 328 adapted to let at least a portion of the airflow through the air diffuser 300. The size of such aperture 328 may be adapted to divide the airflow from the airflow source between air to be diffused and air to pass through the air diffuser 300 (direct airflow).

[0065] In another embodiment comprising an aperture 328, the air diffuser 300 may further comprise a covering member (now shown). The covering member is generally shaped to mate the general shape of the reflecting member 302 and to cover at least a portion of the aperture 328. Understandably, the shape of the reflecting member 302 is not limited to a conical or frusto-conical shape. In other embodiments, the reflecting member 302 could be generally shaped as a pyramid, a frusto-pyramidal shape or any other sloped shape surface. The shape of the aperture 328 is not limited to any particular shape, as long as the said aperture 328 allows portion of the airflow to pass through the air diffuser 300.

[0066] Still referring to Figures 8 to 12, the air diffuser 300 may further comprise an attachment member 303. The attachment member 303 may comprise a plurality of linking member 330 adapted to be mounted, at one end 331, to the reflecting member 302 and, at another end 332, to the airflow source. Each linking member 330 is generally attached to the airflow source at an angle generally aiming at increasing the stability of the air diffuser 300 when mounted. The linking member 330 may further aim at reducing or increasing the difference between the diameter or size of the airflow source and of the reflecting member 320.

[0067] Still referring to Figures 8 to 12, and more particularly to Figure 12, in some embodiments, the reflecting member 302 may further comprise a plurality of reflecting sections 320. In such embodiments, each section 320 is adapted to be mounted to each another to form the reflecting member 302. In a preferred embodiment, each section 320 has a general triangular shape, pie shape or frusto-pie shape.

[0068] In some other embodiments, each section 320 is a panel adapted to be attached to adjacent panels. In such embodiments, each panel 320 may be curved or lightly curved so the attached panels 320 form the desired shape of the reflecting or redirecting member 302. In other embodiments, the panel may be made of light yet rigid material, such as fiberglass or plastic.

[0069] In such embodiments, each section 320 generally comprises side walls 321 and 322, an inner side wall 325 and an outer side wall 326. The inner side wall 325 is typically shaped as a section of the periphery of the aperture 328. The side walls 321 are adapted to mate with each another. In a typical embodiment, a first side wall 321 comprises a lip or protruding portion 323 adapted to fit a receiving portion on the second side wall 322. In a preferred embodiment, the receiving portion overlaps the protruding portion 323 when mated to one another. The receiving portion may be attached to the protruding portion 323 using any attachment member, such as fasteners through the holes or openings 324. The outer wall 326 typically forms a section of the periphery of the air diffuser 300.

[0070] A method to assemble an air diffuser 100 is provided. The method comprising assembling the different sections of the attachment member 1 to form a shape mating with the fan or ventilator, assembling the sections 20 to one another to assemble the reflecting member 2 and attaching the reflecting member to the attachment member. The method may further comprise attaching each of the bracket members 23 to a central attachment structure 27 and attaching each of the sections 20 to the bracket members 23.

[0071] The method may further comprise attaching one end of each linking member 3 to the bracket member 23 and attaching the other end of the each linking member 3 to the attachment member 1.

[0072] In yet another embodiment, the method may further comprise installing a covering member 21 on top of the reflecting member 2.

[0073] The method may also comprise clipping or installing a bottom covering member 24 to the bracket 23. In some embodiments having a multi-section bottom covering member, the method may comprise attaching each section 240 of the bottom covering member to two bracket members 23.

[0074] While illustrative and presently preferred embodiments of the invention have been described in detail hereinabove, it is to be understood that the inventive concepts may be otherwise variously embodied and employed and that the appended claims are intended to be

construed to include such variations except insofar as limited by the prior art.

Claims

1. An air diffuser for an airflow producing at least 5,000 cubic feet per minute (CFM), the air diffuser comprising a reflecting member maintained at a fixed distance from a source of the airflow, the reflecting member comprising a reflecting surface having an outer periphery, the reflecting surface being inclined with regard to the direction of the airflow and being adapted to direct the airflow toward all directions of the outer periphery at angle being function of the inclination of the reflecting surface.

2. The air diffuser of claim 1, the reflecting surface comprising an aperture adapted to let at least a portion of the airflow through the air diffuser.

3. The air diffuser of claim 2, the air diffuser further comprising a covering member adapted to mate the general shape of a top portion of the reflecting surface and to cover at least a portion of the aperture.

4. The air diffuser of any one of claims 1 to 3, the reflecting member further comprising a plurality of reflecting sections adapted to be mounted to each another to form the reflecting surface.

5. The air diffuser of claim 4, the reflecting member having a frustoconical shape;

6. The air diffuser of claim 5, each reflecting member being shaped as section of the frustoconical shape of the reflecting member.

7. The air diffuser of any one of claims 4 to 6, each reflecting section comprising a male portion, a female portion, an outer side and an inner side, the female side of a first reflecting section being adapted to receive the male side of a second reflecting section.

8. The air diffuser of any one of claims 4 to 7, each reflecting section comprising:

   two side walls angled according to the inclination of the reflecting member; and
   an outer wall forming a portion of the periphery of the reflecting member.

9. The air diffuser any one of claims 1 to 8, the air diffuser further comprises an attachment mechanism adapted to attach the reflecting member to the airflow source.

10. The air diffuser of claim 9, the attachment mechanism further comprising a plurality of linking members, each linking member being adapted to be mounted at a first end to the airflow source and at a second end to the reflecting member.

11. The air diffuser of claim 10, each first end of the linking members being adapted to be attached to the airflow source.

12. The air diffuser of any one of claims 1 to 11, the inclination of the reflecting member being between about 10 and 40 degrees.

13. The air diffuser any one of claims 1 to 12, the air diffuser further comprising a bottom covering member adapted to cover an opening formed by a bottom surface of the redirecting member.

14. A method of diffusing air of from a large airflow source, the method comprising:

   assembling a plurality of redirecting sections to form a redirecting surface inclined with regard to the direction of the airflow source and having a periphery;
   maintaining the formed redirecting surface at a predetermined distance from a source of the airflow;
   blowing an airflow from the airflow source toward the formed redirecting surface;
   redirecting the airflow toward all directions of the outer periphery at angle being function of the inclination of the reflecting surface.

15. The method of claim 14, the method further comprising letting at least a portion of the airflow passing through the reflecting surface.

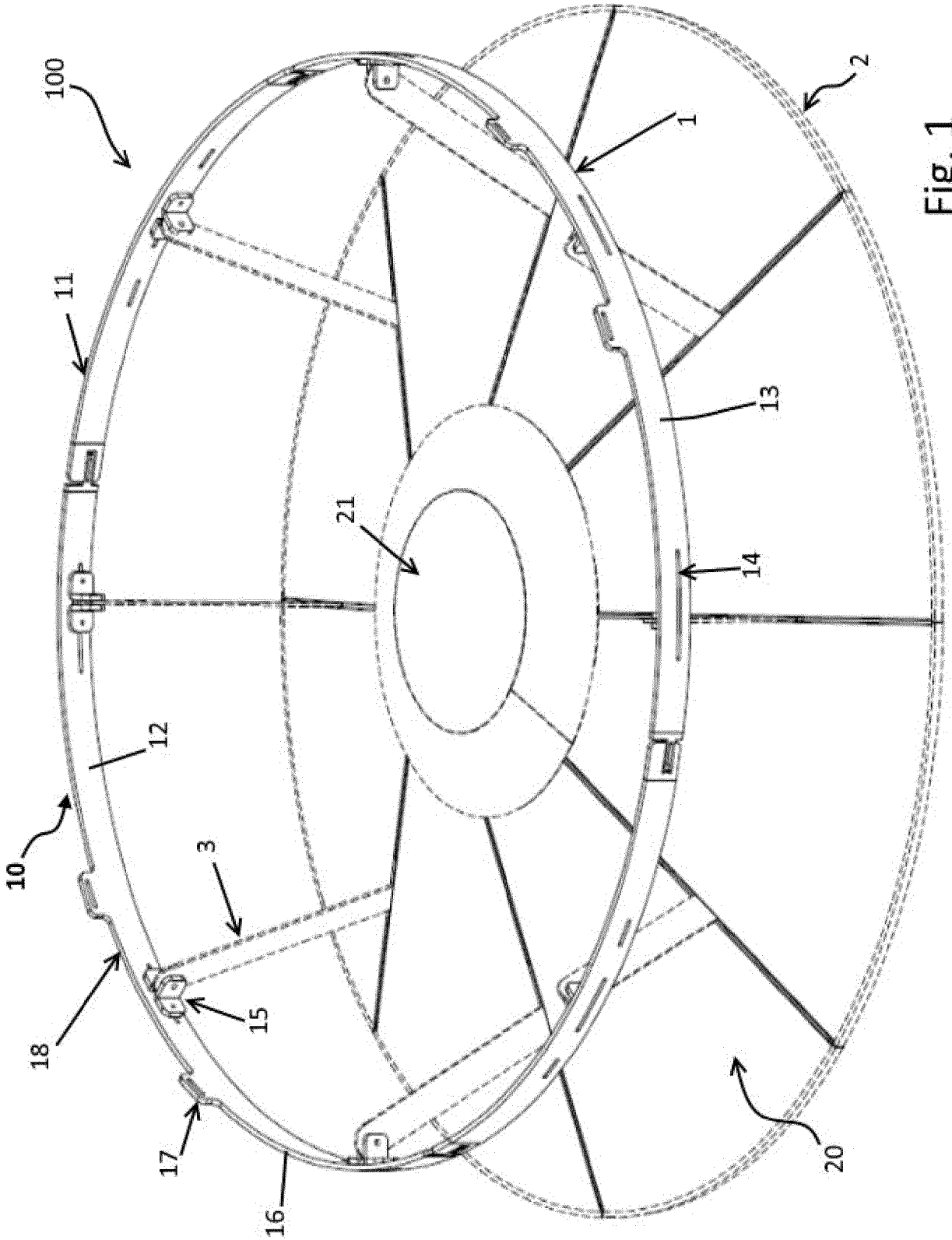


Fig. 1

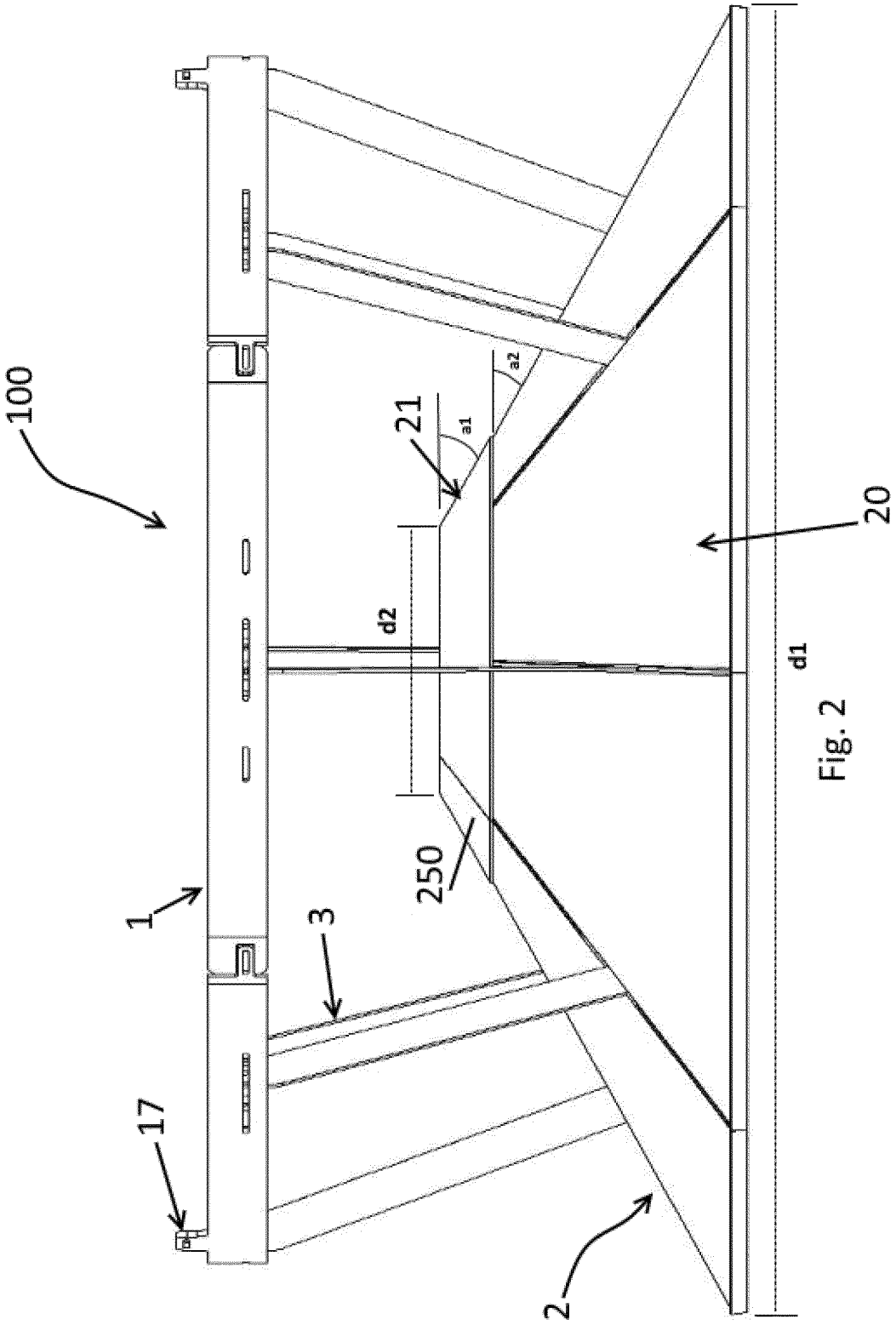


Fig. 2

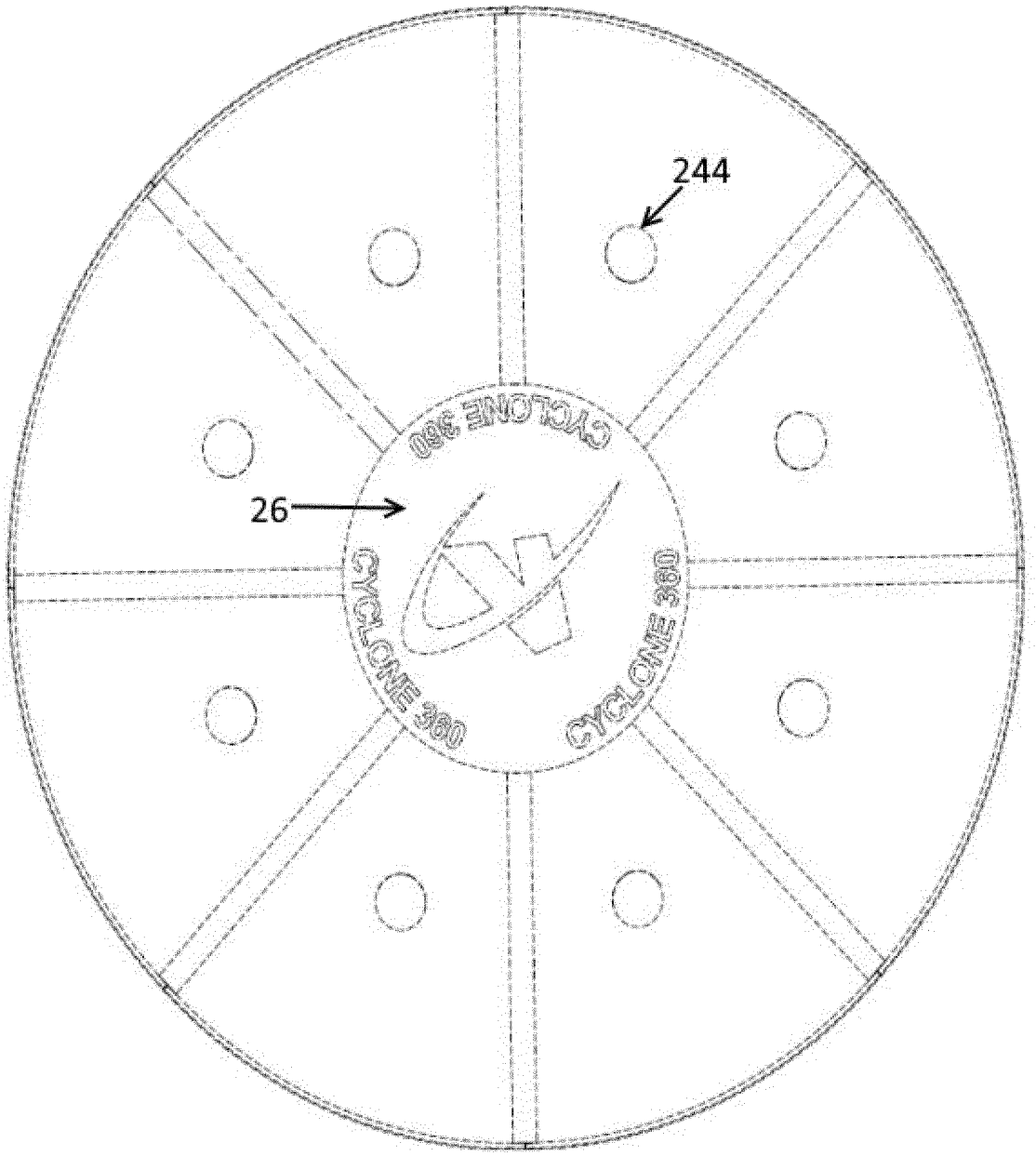


Fig. 3

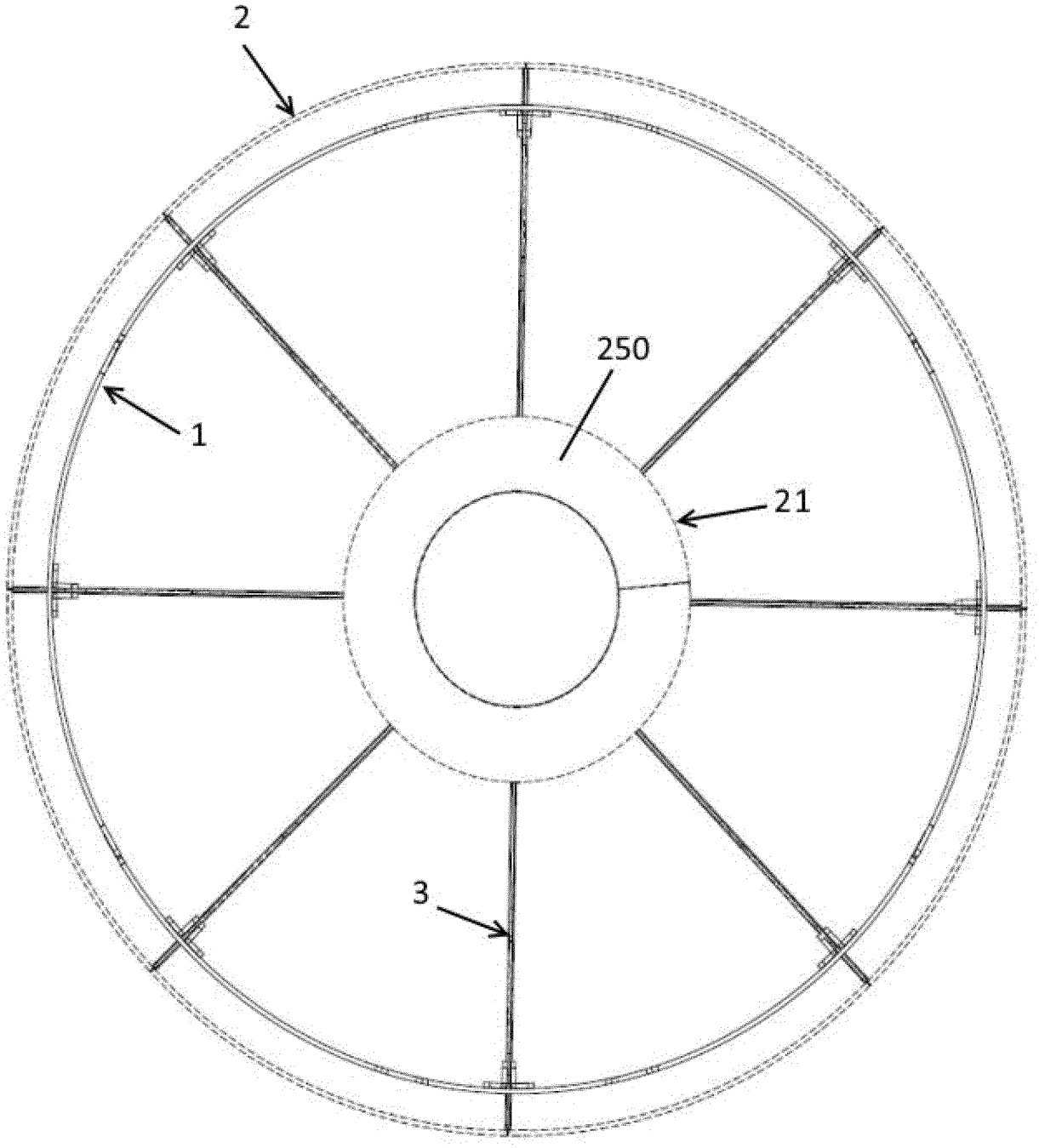
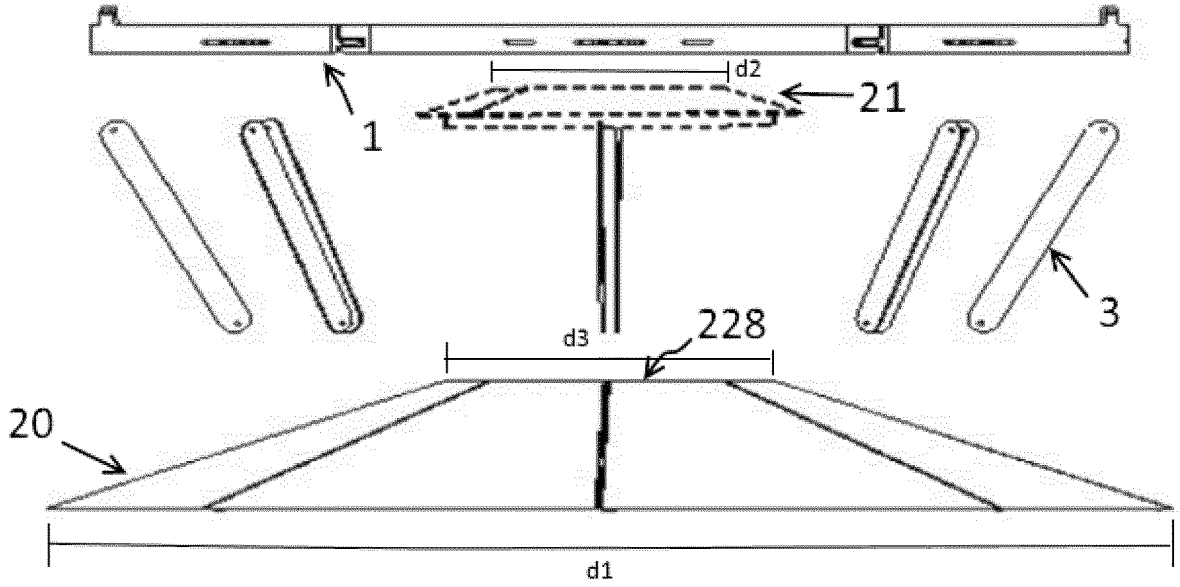
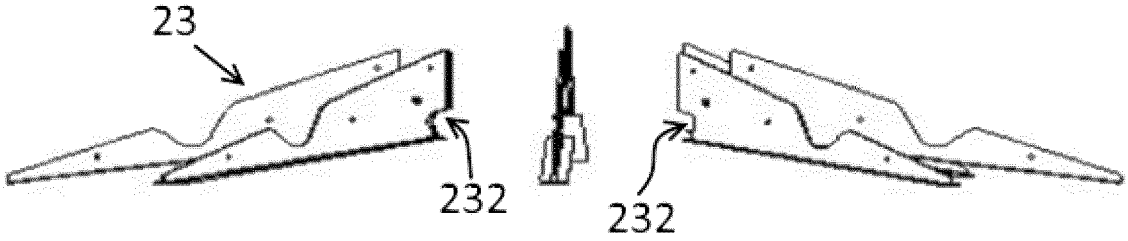
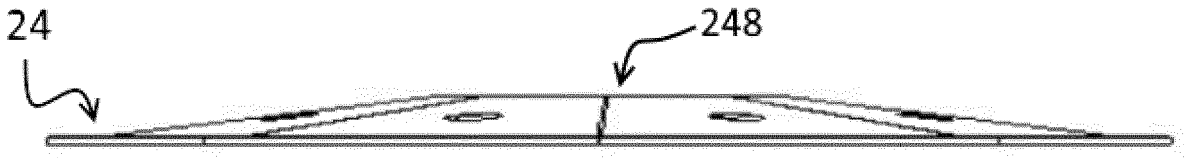


Fig.4







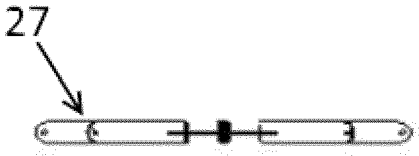
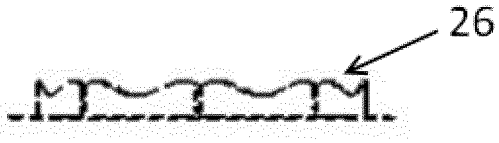


Fig. 5



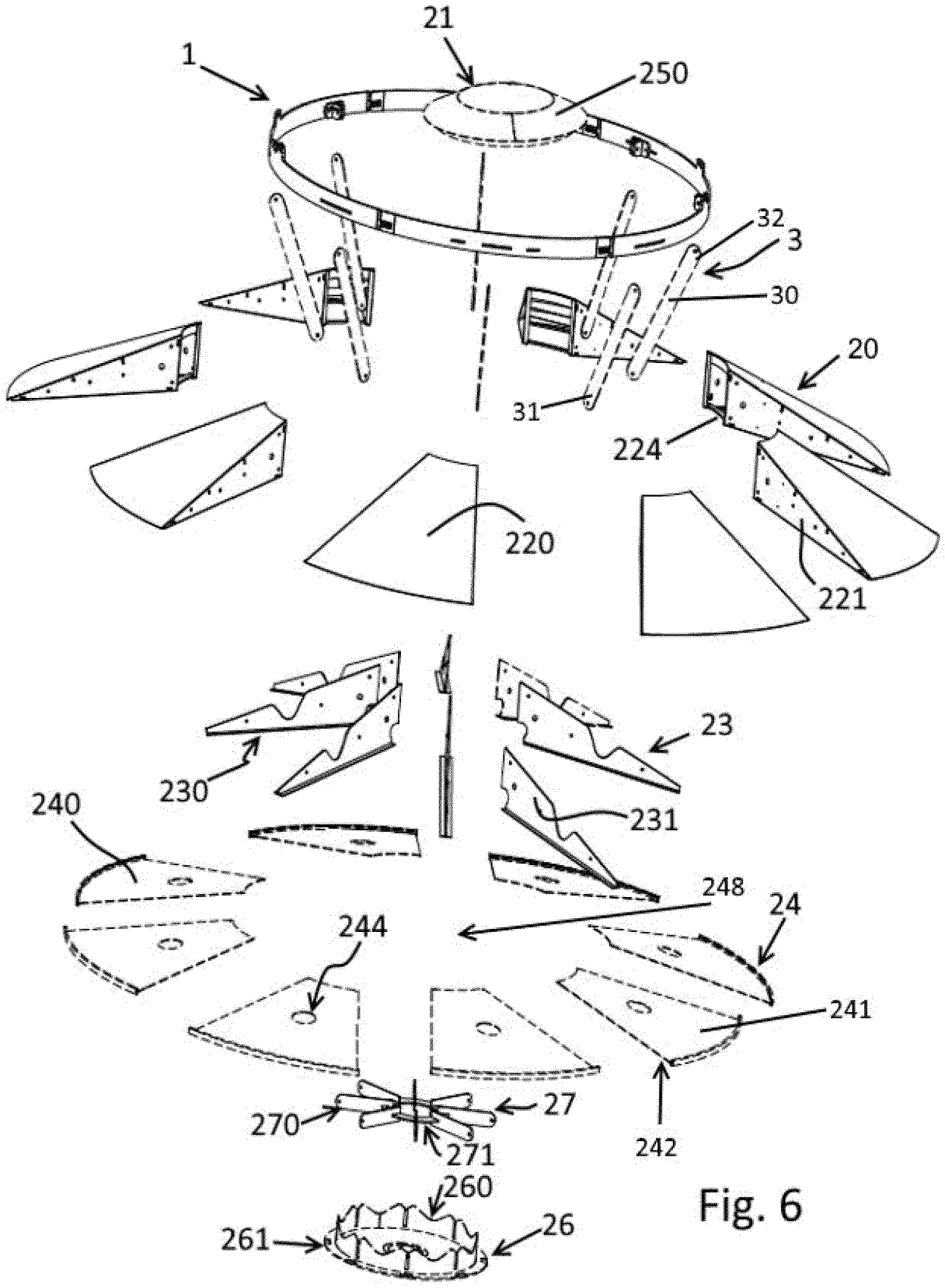

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Fig. 6

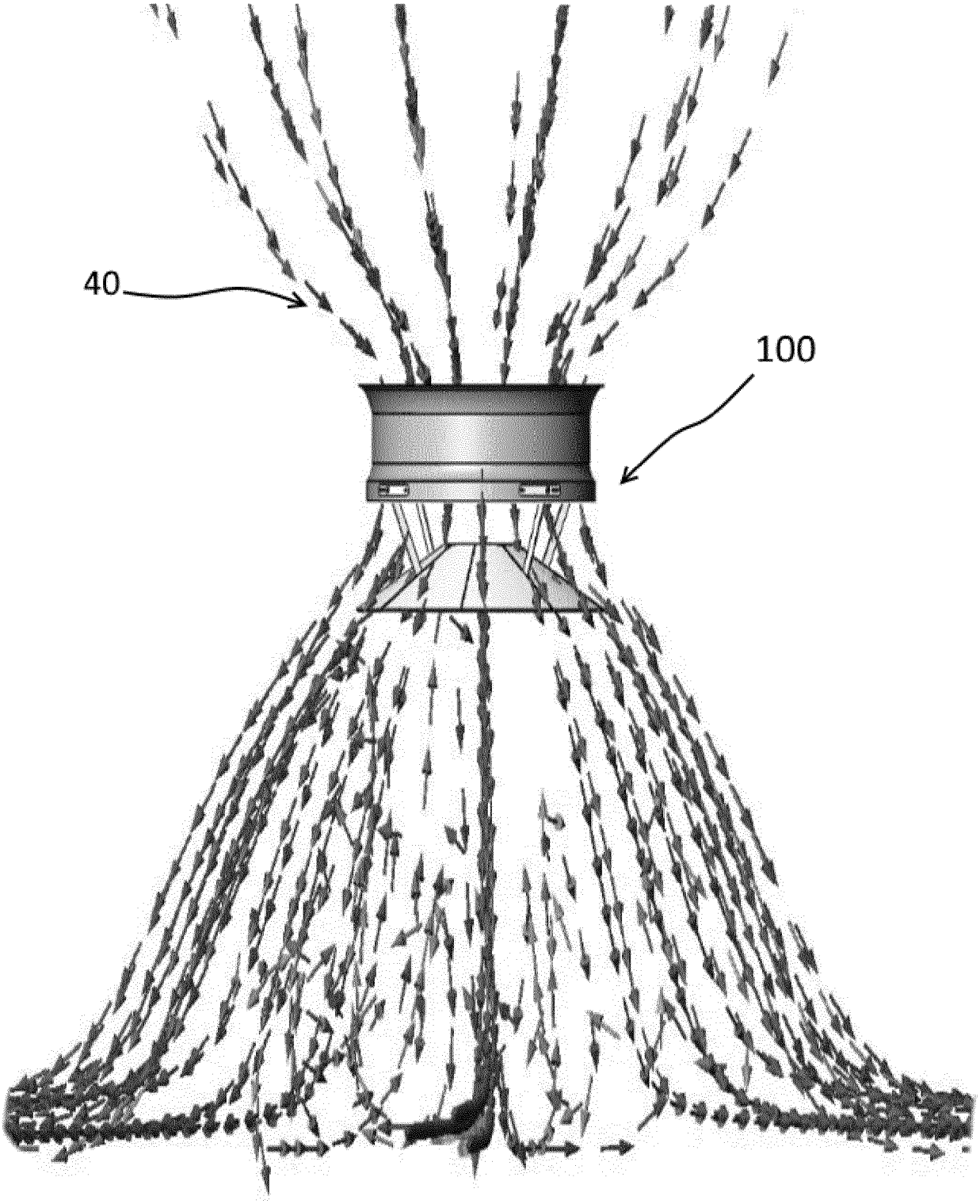

Fig. 7

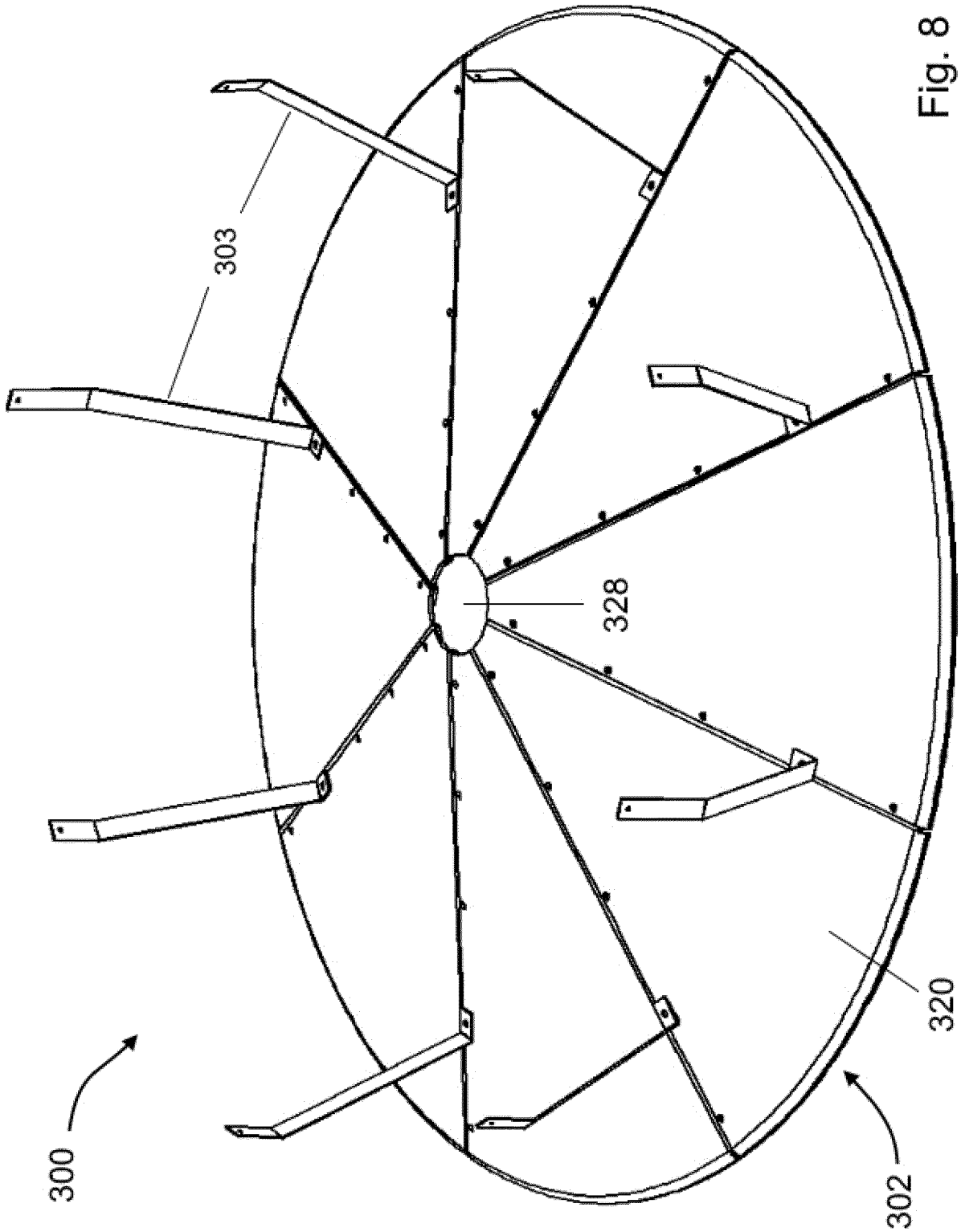

Fig. 8

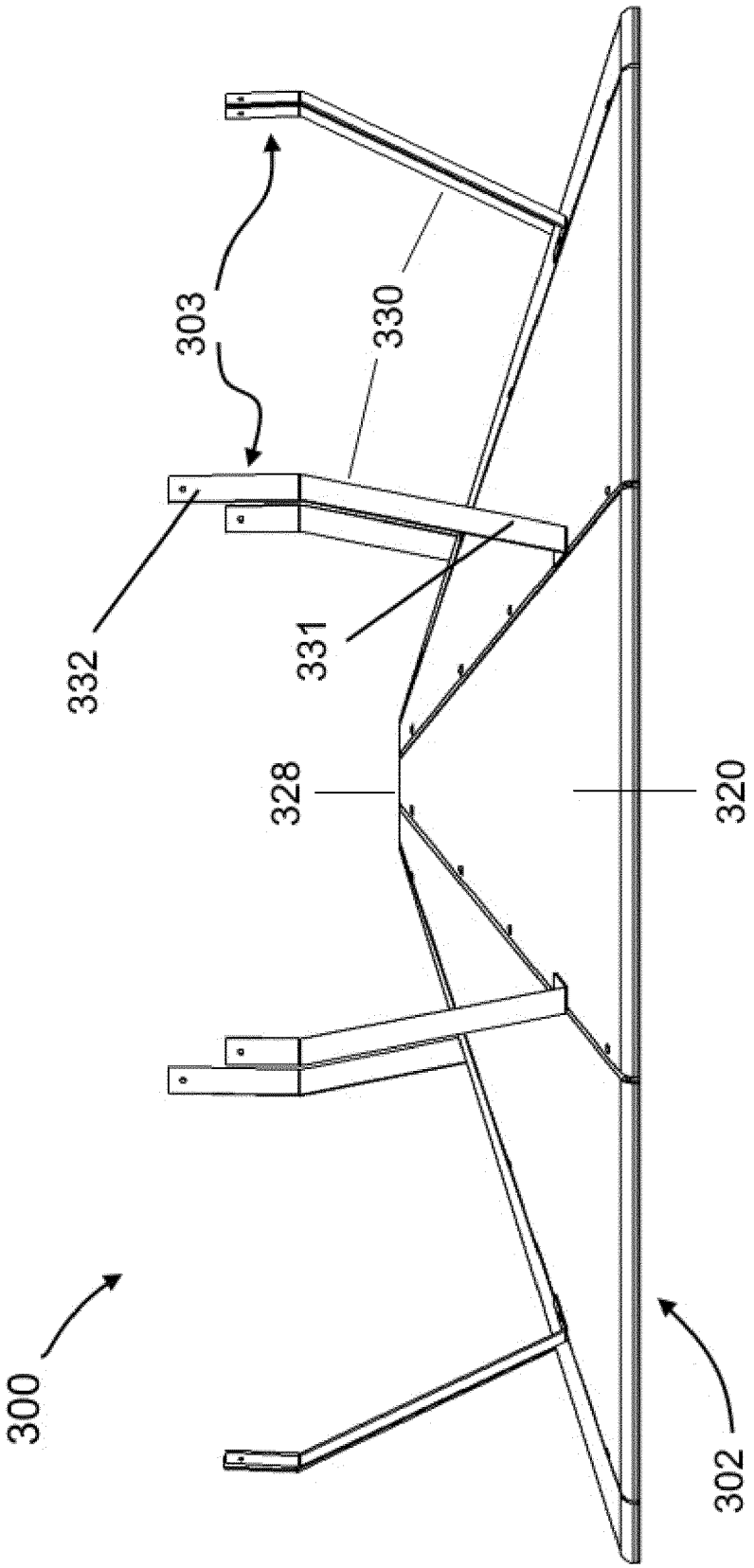

Fig. 9

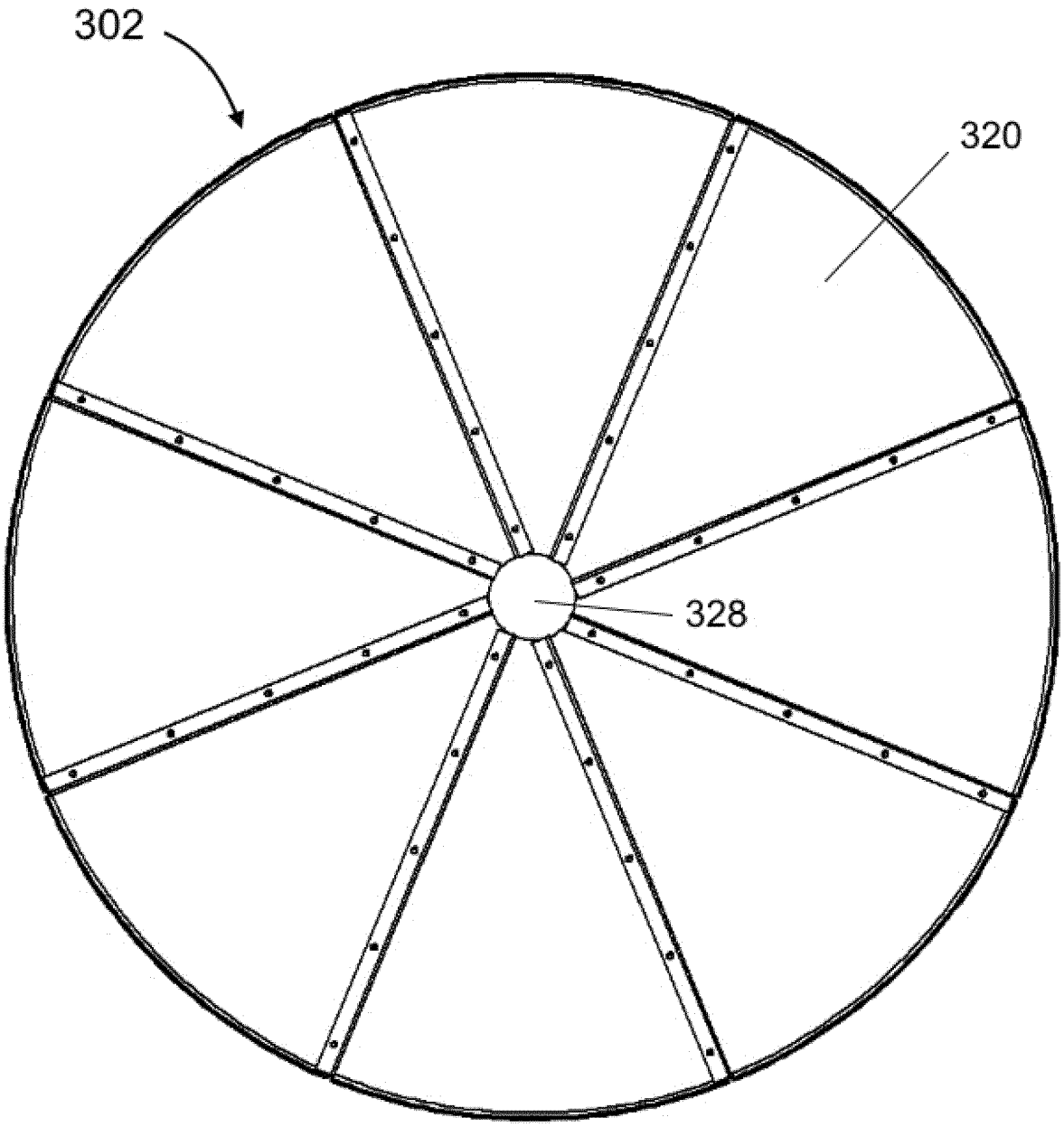

Fig. 10

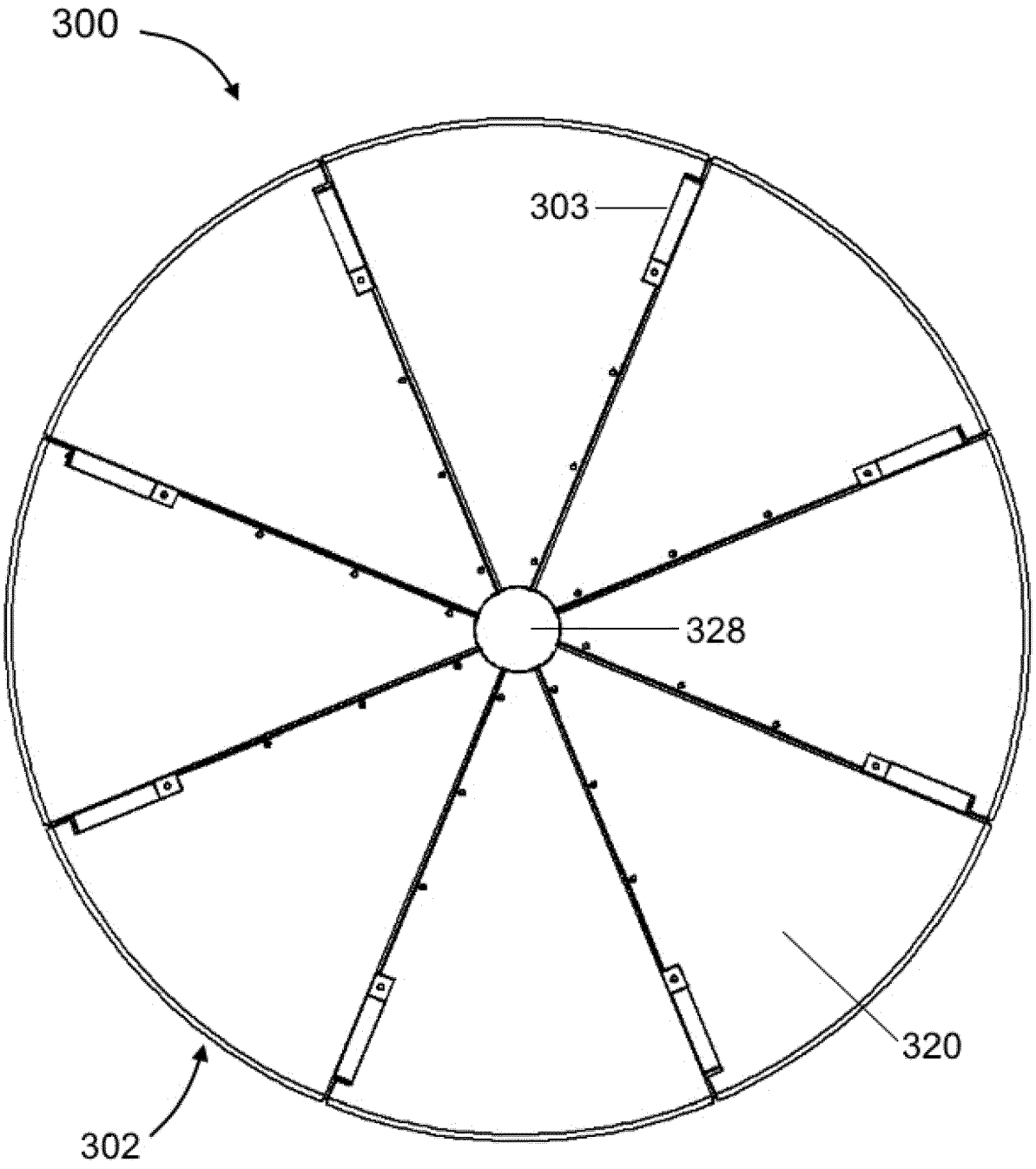

Fig. 11

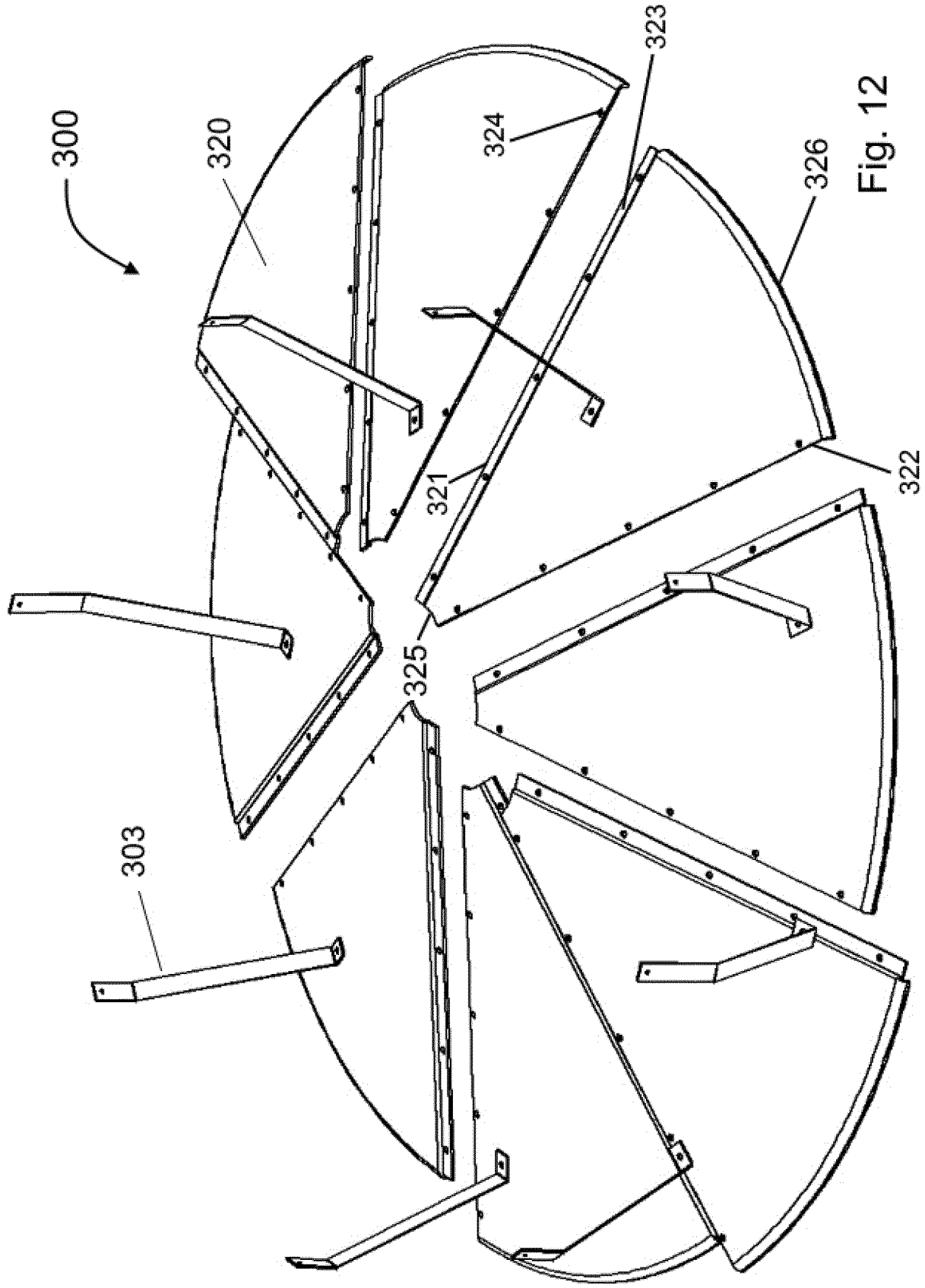

Fig. 12

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EUROPEAN SEARCH REPORT

Application Number
EP 19 16 6229

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Place of search	Date of completion of the search	Examiner
Munich	22 July 2019	Blot, Pierre-Edouard

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