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(54) **Pergola construction**

(57) A pergola construction (1) comprising a first floor (3) supported by a first support element set (5). Moreover,

the pergola construction (1) comprises a second floor (4) supported by a second support element set (7) and a circularly running pergola (2).

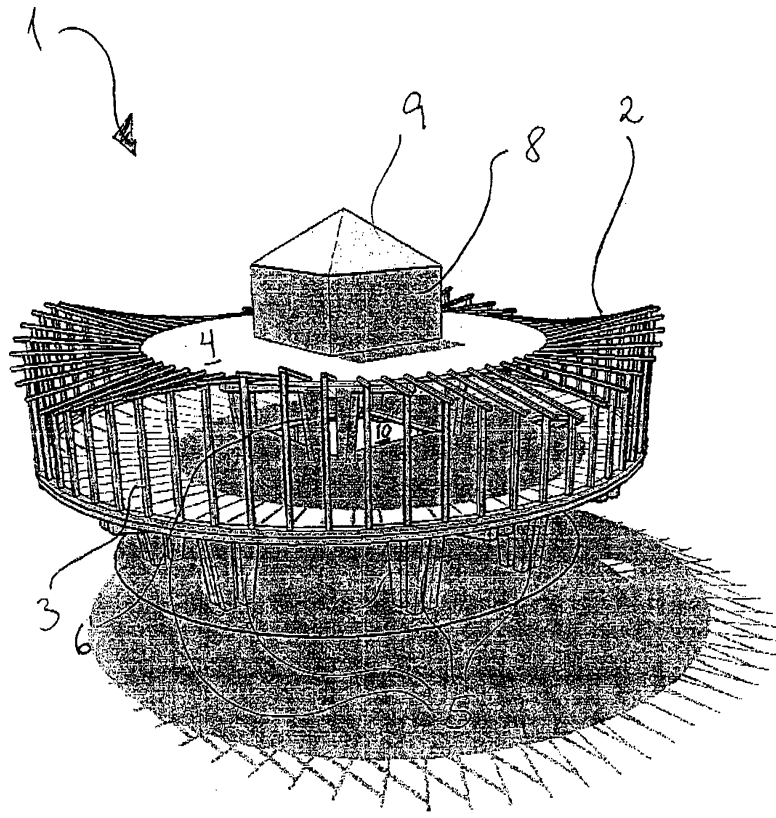


Fig. 1

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Description

[0001] The present invention relates to a pergola construction comprising:

- a first floor supported by a first set of support elements and a second floor supported by a second set of support elements,
- a circularly running pergola.

Background Art

[0002] Pergolas have been known since antiquity. Frequently, pergolas are constructed in such a way that a passageway in the pergola is level with the surface of the ground at the place in question. Pergolas with passageways at a different level than the surrounding surface of the ground may occur e.g. at hillsides. Natural causes make this impossible in countries like Denmark. Pergolas with passageways raised above the surface of the ground are also found in buildings. However, the main use of such buildings is as dwellings or offices, for which reason the construction of said buildings is directed towards fulfilling these purposes and not towards being a raised pergola. Hence, the erection and the use of materials is not directed towards the construction of said pergola, but towards the other purposes of the construction, e.g. as dwelling or office. The erection of such pergolas with raised passageways is therefore expensive and a lot of material is used for the construction. Known pergolas with passageways raised in relationship to the surface of the terrain do not offer the possibility of spending time below the passageway of the pergola.

[0003] The above-mentioned disadvantages of the prior art are at least partially overcome by the present invention.

[0004] In a first aspect of the present invention a pergola construction is provided, comprising a passageway raised above the surface of the ground.

[0005] In a second aspect of the present invention a pergola construction is provided, said pergola being resistant to flooding of the terrain below the passageway of the pergola construction.

[0006] In a third aspect of the present invention a pergola construction is provided said pergola being inexpensive to manufacture.

[0007] In a fourth aspect of the present invention a pergola construction is provided, the support of said pergola construction partially permitting light to pass inside and below the passageway of the pergola.

[0008] In satisfaction of said aspects, a pergola construction according to the present invention is characterised in that each support element of the second set is connected to two support elements of the first set.

[0009] Thus, a strong connection between the first and the second floor is assured. As a result, it is not necessary to pour at the building site, instead, the support elements can be connected directly at the building site. The first

floor may have a diameter of for example 18 meters. The second floor may have a diameter of 12 meters. Both the first floor and the second floor are thus raised above the terrain. Hence, flooding of the terrain with e.g. salt water will have no effect on the vegetation on the two floors. Moreover, the first floor protects from gasses, if the terrain is contaminated. As a result of the first floor being raised above the terrain, the wind will carry polluted air away. The second floor is displaced vertically with respect to the first floor. The first floor is raised above the terrain.

[0010] In another embodiment, the support elements of the second set may be connected to the support elements of the first set by means of pins. The individual support elements of the second set, i.e. each component element, are thus connected by means of a pin. The pin may be a through pin. Thus, a pin can carry each one of the support elements of the second set by said pin extending through two of the support elements of the first set and one of the support elements of the second set.

[0011] As a result, the support elements of the pergola construction are easily erected. The support elements of the second set may be placed with one end on the base and thereafter rotated around the pin so that at the end, the support element are in the desired position. The connection between the support elements of the first and second layer is obtained with pins alone, and therefore the risk of an erroneous assembly is very small.

[0012] In yet another embodiment, the first set of support elements may comprise 32 support elements. This allows for a stable base capable of supporting a large surface area. The support elements may be L-shaped with two substantially identical legs. The support elements may be placed in a foundation. Four support elements may be embedded in one foundation.

[0013] In a preferred embodiment, the second set of support elements may comprise eight support elements. As a result, all the support elements of the second set may be connected to two of the support elements of the first set facing the centre of the pergola construction.

[0014] In yet another embodiment, the support elements of the pergola construction may be positioned on a floating foundation, such as a barge. As a result, the pergola construction may be towed in harbours and on rivers or the like. In one embodiment, the support elements may be manufactured of laminated wood, plastic composite. Additionally, in one embodiment, the support elements may be manufactured in the form of a lattice construction.

[0015] In an advantageous embodiment, the support elements may be substantially identical. As a result, there is no risk of mixing up support elements during assembly. Moreover, it is possible to reduce production costs, when a plurality of identical elements is produced.

[0016] In another preferred embodiment, the support elements and the first and second floor may be made of concrete. Concrete has great strength and is thus suitable for a construction of this type. Moreover, concrete is a comparatively inexpensive material that may be mixed

directly at the building site.

[0017] Advantageously, at least one floor may comprise a circularly running, embedded beam along the periphery of the at least one floor. Thus, the floor can be held together, if the floor is manufactured of several pieces.

[0018] In one embodiment, the circularly running pergola may have a dome-shaped top part.

[0019] In yet another embodiment, at least one of the first floor or the second floor may have a central opening allowing light to shine in. Thus, it is possible to have the first floor illuminated from the centre. This results in less shadowing on the first floor. If both floors have a central opening, the same applies to the area beneath the first floor.

[0020] In an advantageous embodiment, the second floor may also be provided with a glass superstructure. As a result, the second floor may serve as a greenhouse. Moreover, a glass superstructure may provide shelter for human beings or animals staying on this floor.

[0021] In another embodiment, the glass superstructure may have a pyramidal roof. In yet another embodiment, the glass superstructure may have a tunnel-shaped roof. In another embodiment, at least one of the first floor or the second floor may have a substantially circular outer geometry. In an advantageous embodiment, at least one floor may be divided into a number of segments of a circle. Thus, the floors are easier to handle during transport and erection.

[0022] The present invention is described in greater detail below with reference to the accompanying drawing, in which

Fig. 1 shows a pergola construction according to the present invention,

Fig. 2 shows a partial sectional view of an embodiment of the pergola construction,

Fig. 3 shows a top view of a partially transparent first floor of the pergola construction,

Fig. 4 shows a top view of a partially transparent second floor of the pergola construction, and

Fig. 5A and 5B show an embodiment of the support elements of the pergola construction.

Best Modes for Carrying out the Invention

[0023] Fig. 1 shows a pergola construction 1 with a circular pergola 2. The pergola construction 1 comprises a first floor 3 and a second floor 4. The first floor 3 is carried by a first support element set 5 (only partially visible) consisting of a plurality of support elements 6. The second floor 4 is carried by a second set 7 of support elements also consisting of component elements 6'. On top of the second floor 4 there is a glass superstructure

8 having a pyramidal roof 9. Moreover, the first floor 3 of the pergola construction comprises a central opening 10. In Fig. 1, the pergola construction 1 is depicted being illuminated by the sun (not shown), and therefore the figure is shown with shadows (no reference numbers). Another expression for the support element 6, 6' is component element 6, 6'.

[0024] Fig. 2 shows another embodiment of a pergola construction 1 shown in Fig. 1. Fig. 2 is a partial sectional view taken along the line II of Fig. 3. The pergola construction 1 is illustrated with a first floor 3 and a second floor 4. On the second floor 4 there are three glass superstructures 8 having pyramidal roofs 9. Moreover, on top of the middle one of said three glass superstructures 8 there is yet another glass superstructure 8 having a tunnel-shaped cross-section 11. Additionally, the pergola construction 1 comprises a first staircase 12 leading from the surface of the ground 13 (terrain) to a passageway 14 on the first floor 3. Furthermore, a staircase 15 leads from the surface of the ground 13 to the second floor 4. In this embodiment, the second floor 4 is provided with a balustrade 16. Both the entire first floor 3 and the entire second floor 4 can be walked on. A part of the first floor 3 is designated as the passageway 14, and two sides of said area are defined by vertical beams 17 and superjacent beams 18, respectively. Said beams 17, 18 form a pergola raised above the surface of the ground 13. The surface of the ground 13 may consist of various different materials, such as soil, gravel, stones, but may also be covered by paving (not shown). As can be seen from the figure, the vertical beams 17 are of different lengths, and as a result, an undulating effect is conferred upon the beams along a periphery 19 of the first floor 3. A beam 20 is embedded along the periphery 19. The vertical beams 17 may rest on said beam 20. If the first floor 3 consists of several component elements, the beam 20 can keep them together. The passageway 14 may have a width of approximately 2-4 meters, preferably approximately 3 meters.

[0025] Fig. 3 shows a top view of the first floor 3 in a transparent section, where it is apparent that the first support element set 5 consists of component elements 6 arranged in groups of four. As can be seen from the figure, there are 32 component elements 6 in eight groups of four component elements 6 each. Between said four elements, installations for e.g. water, electricity or drainage could be hidden so that they are protected from vandalism.

[0026] Fig. 4 shows a top view of the second floor 4. In this embodiment, the second floor 4 has a smaller diameter than the first floor 3, and therefore, its periphery 19 is marked by a dashed line. The superjacent beams 18 rest on the second floor 4 and extend from said second floor 4 and beyond the periphery 19 of the first floor 3. The first set of support elements 5 supporting the first floor 3 is partially visible. The second set of support elements 7 supporting the second floor 4 consists of eight component elements 6'. The pyramidal roofs 9 are

marked by dotted lines 9. A dotted line 21 marks the top of the glass superstructure having a tunnel-shaped cross-section 11 along its longitudinal axis. The second floor 4 is shown having a central opening 10 allowing light to shine down onto the first floor 3 (not shown). Inside the central opening 10 the staircase 15 is visible.

[0027] Fig. 5A shows component elements 6 and 6', where the bottom ones form part of the support elements 6 of the first set 5. In this embodiment, the bottom ones are embedded in a foundation 22. Furthermore, a component element 6' supporting the second floor 4 (not shown) and thus being part of the second set 7 of support elements 6', is depicted being mounted on the bottom component elements 6. The bottom component elements 6 are arranged in groups of four with a distance such that the top component element 6' can be mounted between two of said component elements 6 (as illustrated in Fig. 5B). The dotted contour shows the component element 6' in a position during assembly of such an element. By mounting a pin 23 through a hole 24, an anchor hole, the component elements supporting the second floor 4 may be rotated into place following a path along the circular arc C, until they reach their final positions. The hole 24 may have a diameter of approximately 50 mm. Since all the component elements may be identical, the hole 24 is also visible on component elements not having elements to support the second floor mounted thereon. Therefore, the use of cranes and thus the costs can be minimized. As can be seen from the figure, the component elements 6, 6' have an L-shaped design. The legs of the support elements 6, 6' may have a length of approximately 3 meters.

[0028] Fig. 5B is a top view of how a component element 6' supporting the second floor 4 (not shown) is positioned between two component elements 6 supporting the first floor 3. The pin 23 is illustrated by means of a dotted line.

Claims

1. A pergola construction (1) comprising:

- a first floor (3) supported by a first set (5) of support elements (6) and a second floor (4) supported by a second set (7) of support elements (6'),
- a circularly running pergola (2),

characterised in that each support element (6') of the second set (7) is connected to two support elements (6) of the first set (5).

2. The pergola construction (1) according to claim 1, **characterised in that** the support elements (6') of the second set are connected to the support elements (6) of the first set (5) by means of pins (23).

3. The pergola construction (1) according to claim 1 or 2, **characterised in that** the support elements (6) of the first set (5) comprise 32 support elements (6).

4. The pergola construction (1) according to claim 1, 2 or 3, **characterised in that** the support elements (6') of the second set (7) comprise 8 support elements (6').

5. The pergola construction (1) according to any one of claims 1-4, **characterised in that** the support elements (6, 6') are substantially identical.

6. The pergola construction (1) according to any one of claims 1-5, **characterised in that** the support elements (6, 6') and the first (3) and second (4) floor are made of concrete.

7. The pergola construction (1) according to any one of claims 1-6, **characterised in that** at least one floor (3, 4) comprises a circularly running, embedded beam (20) along the periphery (19) of the at least one floor (5, 7).

8. The pergola construction (1) according any one of claims 1-7, **characterised in that** the circularly running pergola (2) has a dome-shaped top part.

9. The pergola construction (1) according to any one of claims 1-8, **characterised in that** at least one of the first floor (3) or the second floor (4) has a central opening (10) allowing light to shine in.

10. The pergola construction (1) according to any one of claims 1-9, **characterised in that** the second floor (4) is additionally provided with a glass superstructure (8).

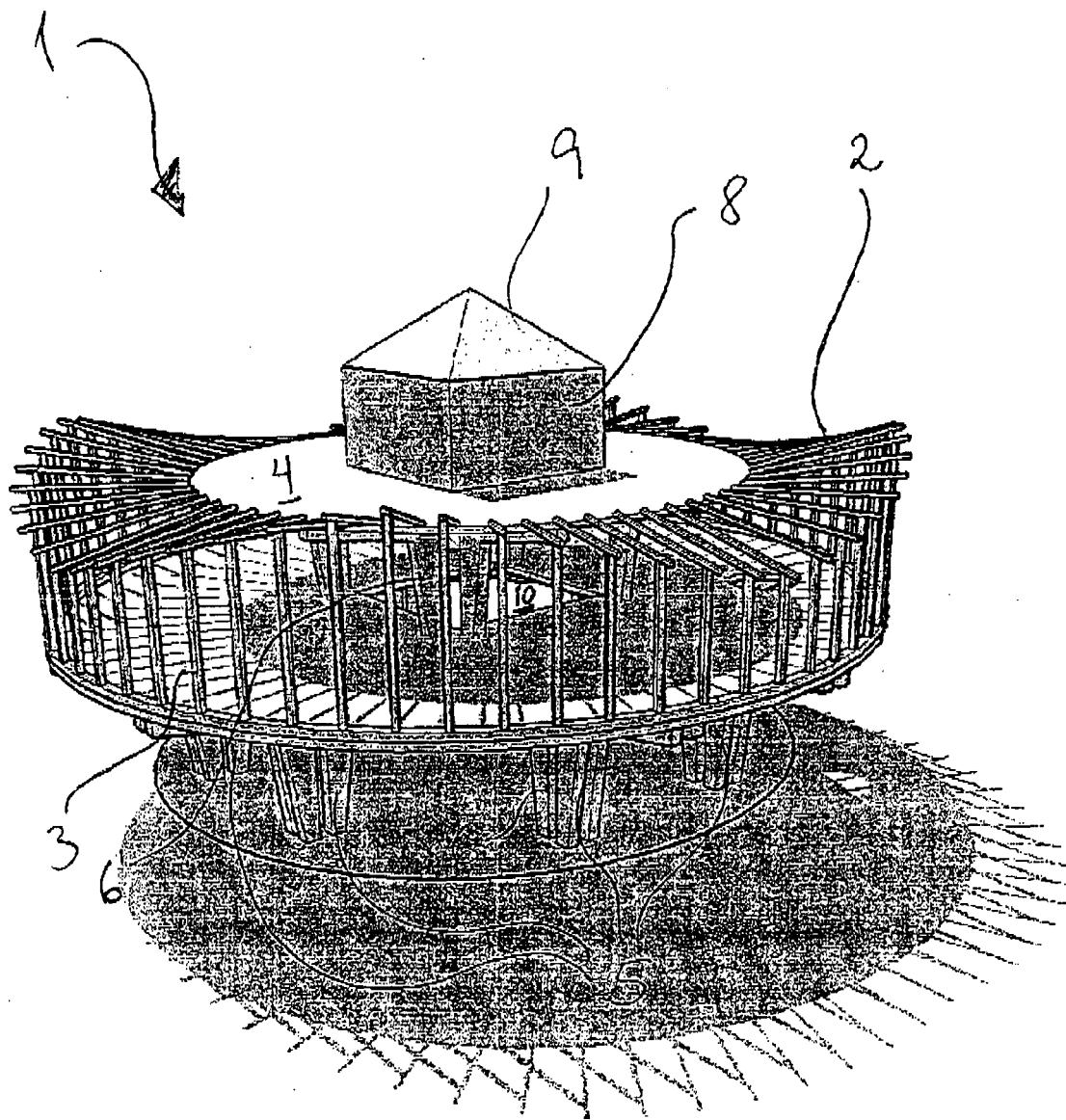


Fig. 1

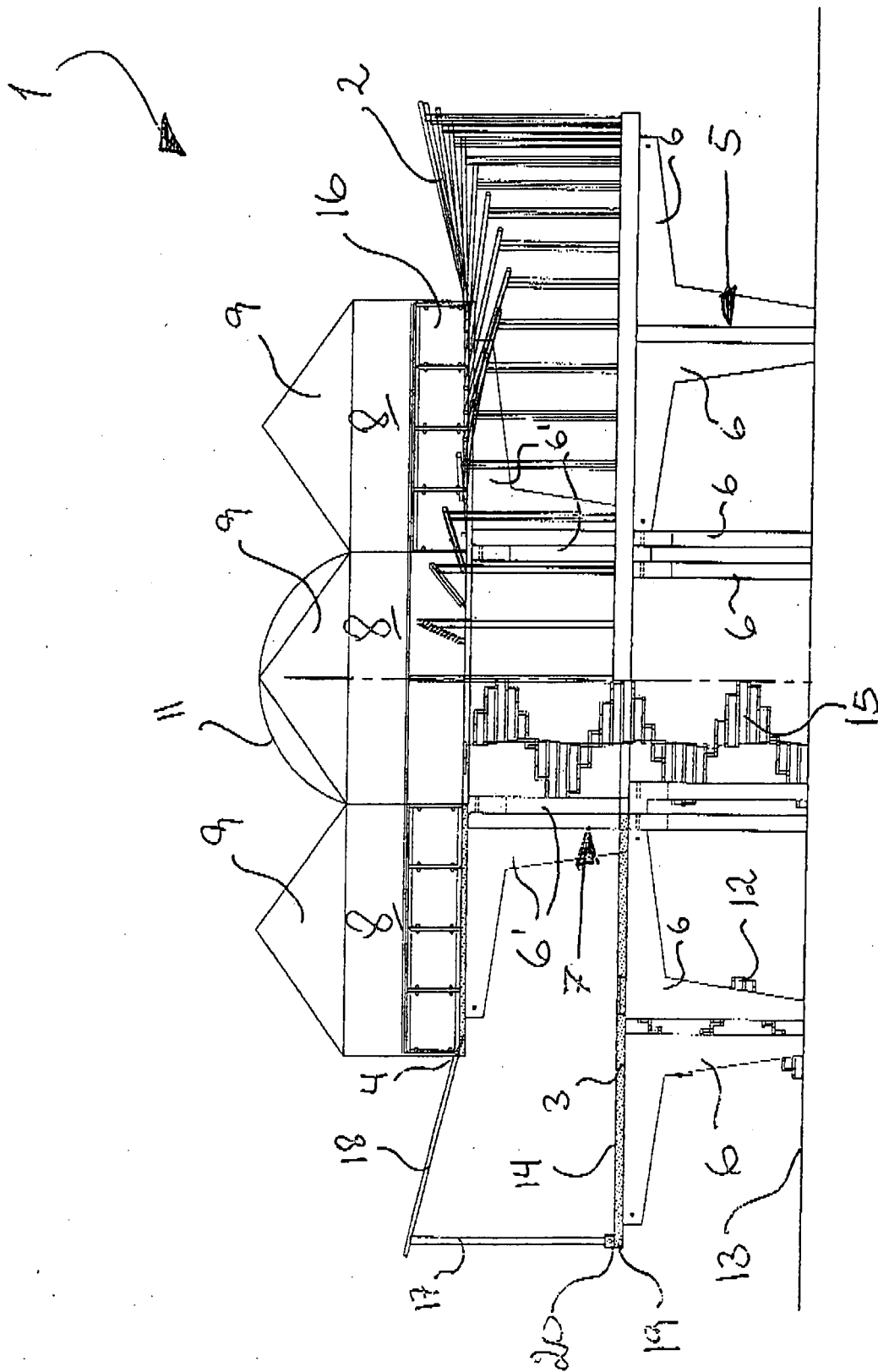


Fig. 2

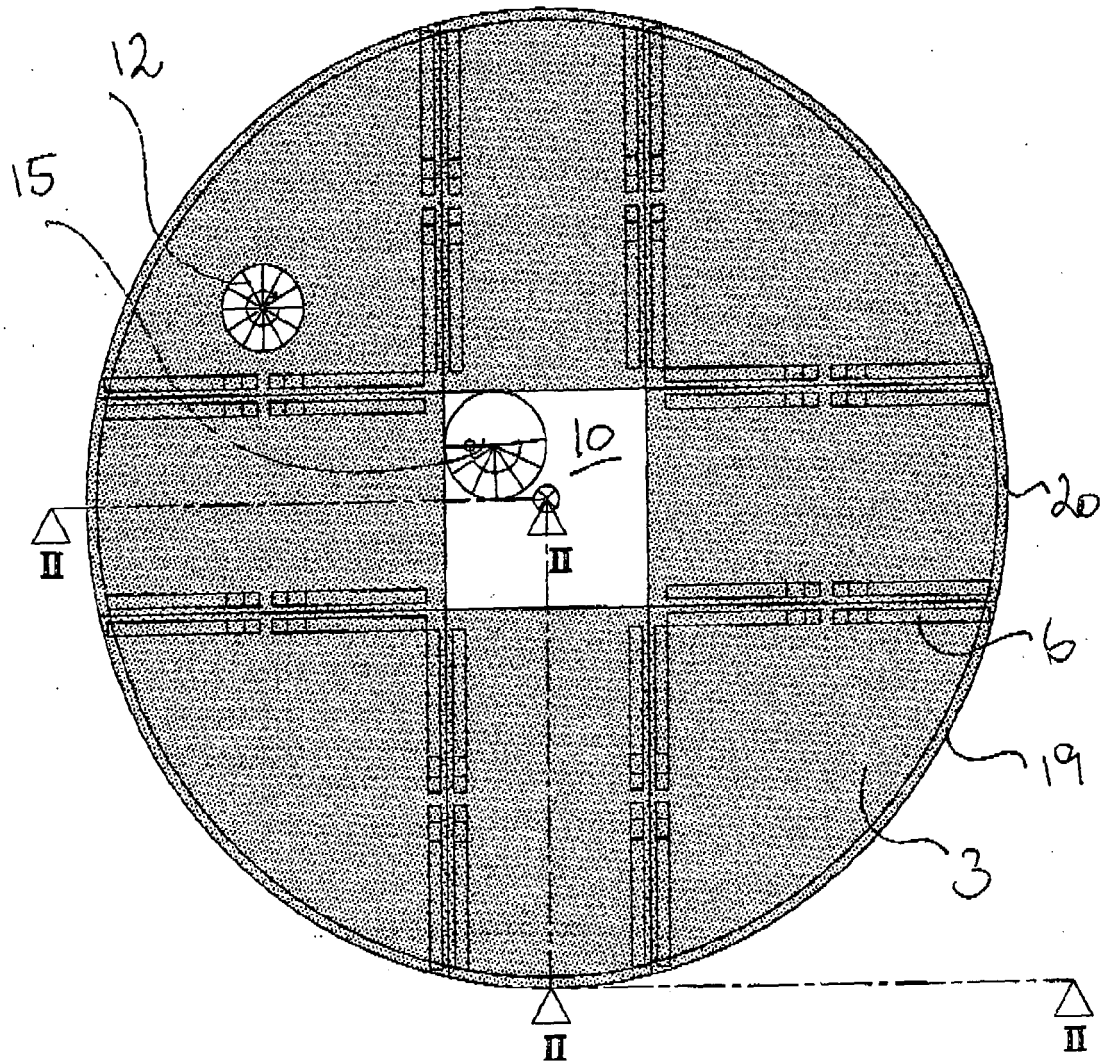


Fig. 3

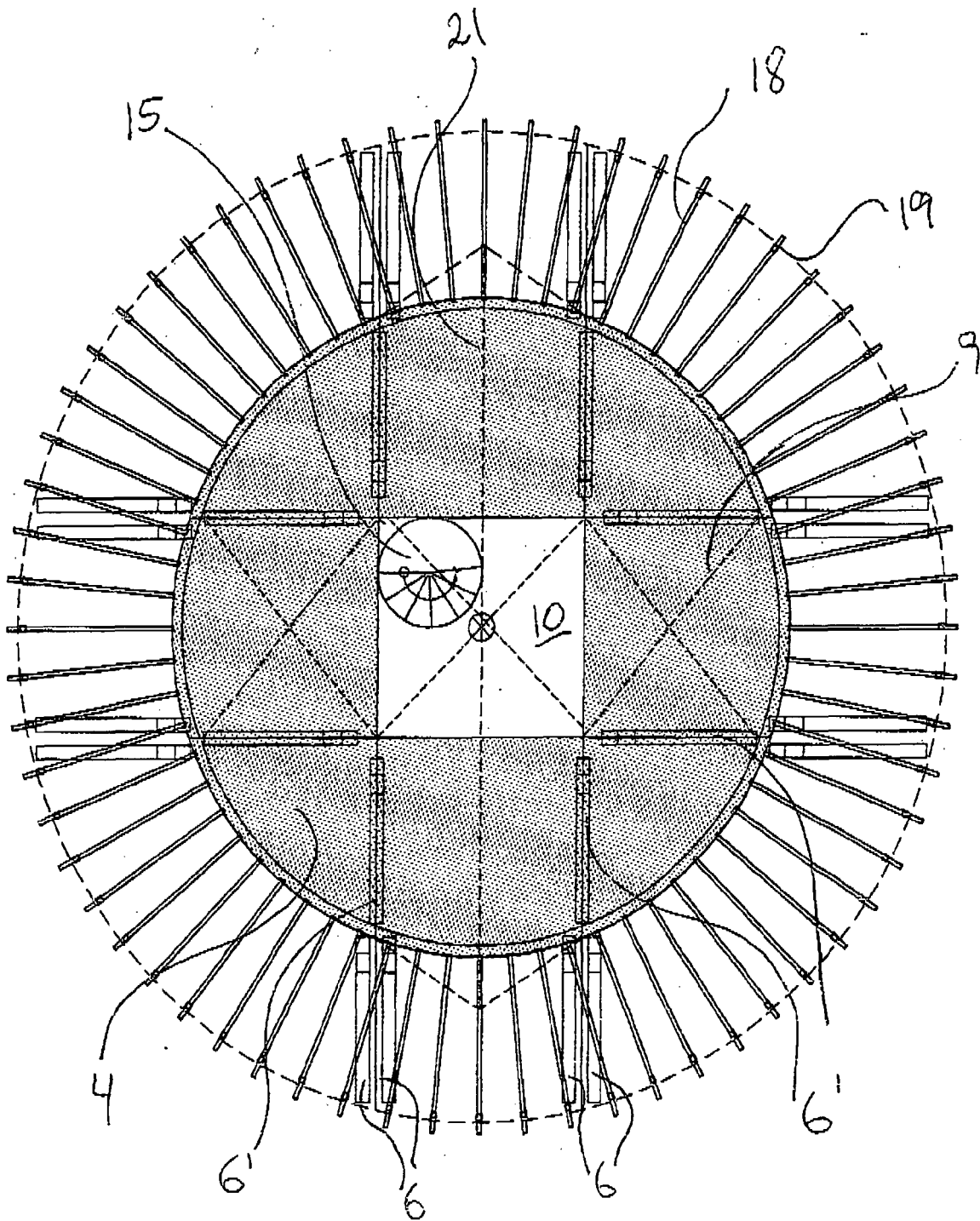


Fig. 4

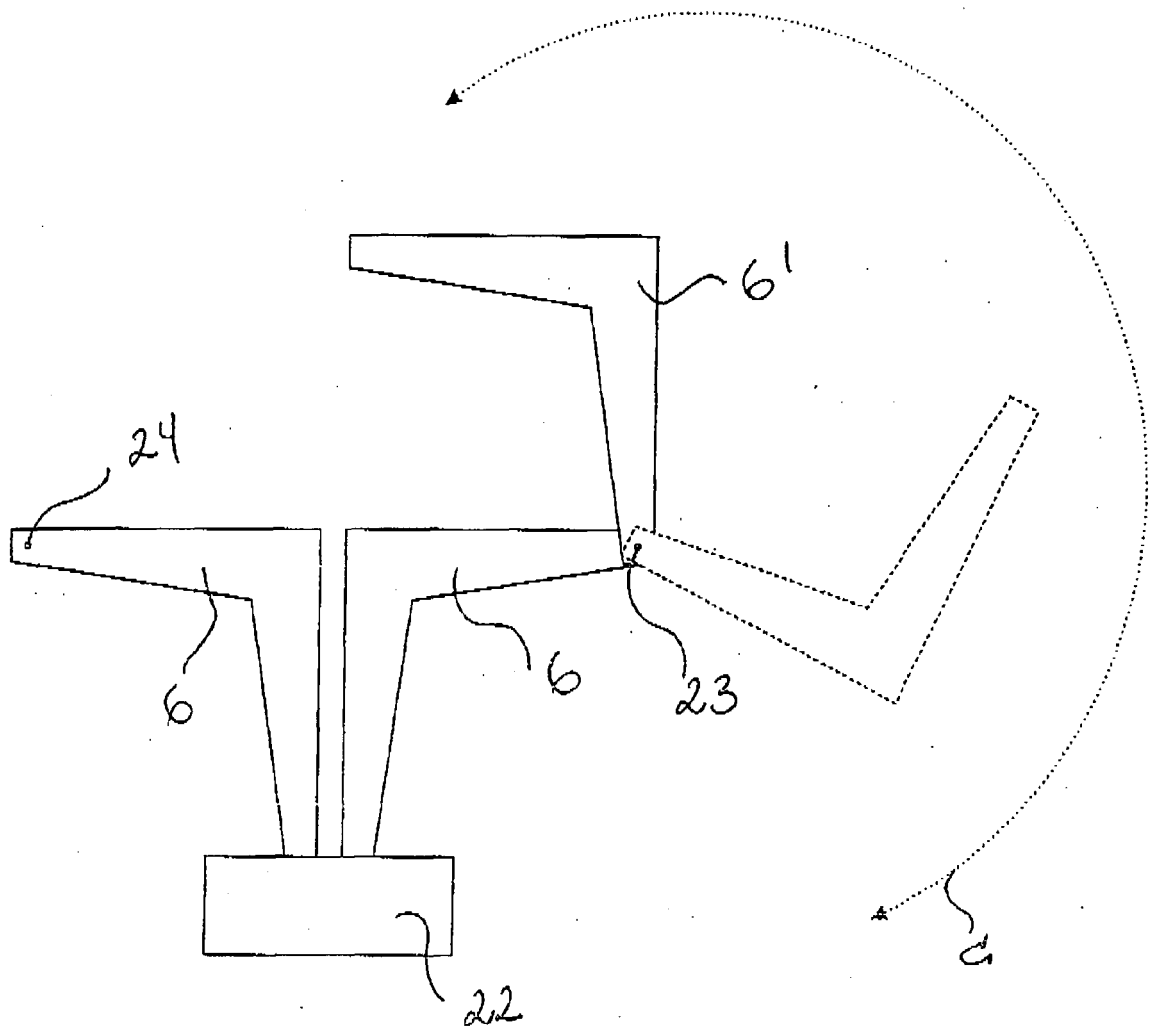


Fig. 5A

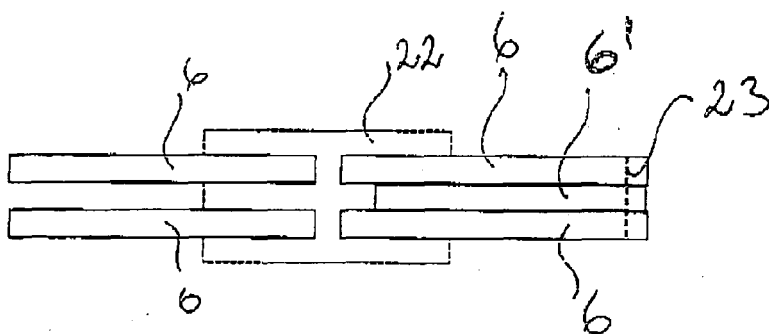


Fig. 5B



EUROPEAN SEARCH REPORT

Application Number
EP 08 01 7623

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 April 2009	Examiner Rosborough, John
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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23-04-2009

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