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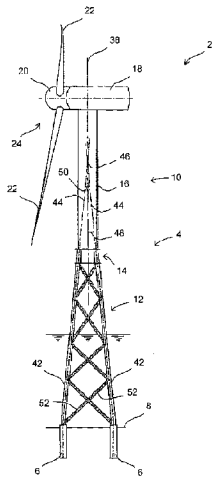


FIGURE 1

(57) **Abstract**: A structure (4) comprising a first part (10) supporting a second part (12) and connected by means of a transition device (14). The first part (10) comprises an elongate column (16), the second part (12) comprises at least three elongate columns (42) and the transition device (14) comprises at least three elongate struts (66) secured relative to one another by securing means. The elongate struts (66) are positioned about a portion (26) of the first part (10) of said structure (4) which is connected to the second part (12) of said structure (4) and the structure (4) is characterised in that a central longitudinal axis (44) of each elongate column (42) of the second part (12) extends from the associated column (42) to converge on a single point (46) and define an included angle (50) therebetween. Furthermore, each of said struts (66) has a central longitudinal axis (70) extending therefrom to converge on said single point (46) and define an included angle (74) substantially equal to said included angle (50) of the elongate columns (42) of the second part (12).

WO 2011/070325 A2

A Structure

The present invention relates to a structure and more particularly, but not exclusively, to a structure for supporting a wind-turbine in an offshore location.

A conventional wind-turbine construction typically comprises a wind-turbine mounted in a nacelle at an elevated location on a cylindrical mast. The mast extends from the ground and has a slender shape so as to ensure it does not obstruct the blades of the wind-turbine. Whilst this type of support structure is well suited for ground-based installations, it is not practical when the wind-turbine is to be located offshore. In these circumstances, a portion of support structure to be located in the water and secured to the seabed often comprises a trusswork structure. The trusswork structure provides a platform above the surface of the sea on which a cylindrical mast structure may be mounted.

It will be understood therefore that in a typical offshore wind-turbine installation, a first (upper) part of the structure is a slender cylindrical mast, and a second (lower) part of the structure is a trusswork structure, wherein the two parts are secured to one another by suitable means.

A prior art offshore wind-turbine installation is disclosed in US patent application number 11/630,869 (published as US 2008/0028715 A1). The installation disclosed in this prior art document comprises trusswork providing a large platform, at an upper end thereof, on which a supporting mast of a wind-turbine is mounted. The two parts of the structure (i.e. the trusswork and the mast) are connected to one another by means of tubular/conical struts which extend diagonally inwardly from supporting legs (columns) of the trusswork to engage with a lower portion of the mast. The upper ends of the diagonal struts, which engage the mast, are welded to the mast and to an annular plate projecting outwards from, and encircling, the mast.

In the prior art installation, four columns of the trusswork extend upwardly from pile foundations to a location above the surface of the sea. The upper ends of these columns are provided with a torsion plate, which forms part of the platform on which the mast is mounted and secured with the aforementioned diagonal struts. However, the four columns of the trusswork are arranged so that the planform of the platform has dimensions considerably larger than the diameter of the mast. As a consequence, the trusswork of the prior art installation is unduly bulky, particularly in the region of transition between the first part of the structure (i.e. the wind-turbine mast) and the second part of the structure (i.e. the trusswork).

A further prior art wind-turbine installation is disclosed in US patent application number 11/795,339 (published as US 2008/0290245 A1). This prior art document discloses a similar installation to that described in US patent application number 11/630,869. In particular, four columns of a trusswork extend upwardly from pile foundations and are described as being arranged so that their longitudinal axes meet near the centre of gravity of the wind-turbine. As a consequence, the platform provided at the upper ends of the columns (and on which the mast of the wind-turbine is mounted) has a planform considerably larger than the diameter of the wind-turbine mast and diagonal struts used in securing the mast to the platform extend inwardly at an angle to both the mast and the columns (as in the installation of US patent application number 11/630,869).

A particular problem with the prior art installations is that the transition between the first part of the structure and the second part of the structure is necessarily bulky and heavy in order to adequately transmit loads from the wind-turbine to the pile foundations in the seabed. This complicates the construction process and increases costs associated therewith. Furthermore, if the height of the platform above the seabed is to be varied for different installations (but for a given pile foundation planform) perhaps in order to vary the height of the wind turbine (or other elevated mass), then the arrangement of

the diagonal struts in the region of the transition must be redesigned (since the spacing of the columns at their upper ends will change, as will the size of the platform as a consequence) and this redesign limits standardisation in the prior art installation.

It is an object of the present invention to provide a simple, light-weight and robust structure on which to mount a wind-turbine.

A first aspect of the present invention provides a structure comprising first and second parts connected to one another, the second part providing support for the first part; wherein the first part comprises an elongate column; and the second part comprises at least three elongate columns, and a transition device by means of which the first and second parts are connected; the transition device comprising at least three elongate struts secured relative to one another by securing means, wherein the elongate struts are positioned about a portion of the first part of said structure which is connected to the second part of said structure; characterised in that a central longitudinal axis of each elongate column of the second part extends from the associated column to converge on a single point and define an included angle therebetween, and each of said struts has a central longitudinal axis extending therefrom to converge on said single point and define an included angle substantially equal to said included angle of the elongate columns of the second part.

Ideally, the axis of each elongate column of the second part is coincident with a different central longitudinal axis of said struts of the transition device. Preferably, said single point is coincident with a central longitudinal axis of the elongate column of the first part. Furthermore, the axes of the second part may make the same included angle with the central longitudinal axis of the elongate column of the first part.

Preferably, said securing means comprises first securing means positioned at a first location along the lengths of the elongate struts and second securing means positioned at a second location along the lengths of the elongate struts.

First securing means of the securing means is ideally positioned at first ends of the elongate struts, wherein said first ends are preferably lower ends of the elongate struts. Similarly, second securing means of the securing means may be positioned at second ends of the elongate struts, wherein the second ends are distal to the first ends.

It is preferable for said portion of the first part of the structure to be positioned between the first and second securing means.

Each first and second securing means may be a unitary member, and each unitary member may be a generally planar plate. Ideally, one of said securing means is provided with an aperture through which said portion of the first part extends and, optionally, the other one of said securing means may define a bulkhead against which an end of said portion of the first part abuts.

It is also preferable for said portion of the first part of said structure to be connected to each or at least one elongate strut. Ideally, said portion of the first part of said structure is connected to an elongate strut along the full length of said elongate strut. It is particularly preferable for said connection between the first part and an elongate strut to be made by means of one or more planar web members. Ideally, said portion of the first part of said structure is connected to each elongate strut by means of two planar web members.

The elongate columns of the second part are preferably arranged relative to one another so as to define a frusto-conical shape. Ideally, said struts are arranged relative to one another so as to define a frusto-conical shape.

The first part of said structure may comprise a flange adjacent which the first securing means is located. Preferably, said flange is an annular shaped internal shoulder which extends radially inwardly from an inner surface of the first part. The securing means may abut an outer surface of the first part in a region concentric with said annular shaped internal shoulder. Ideally, said internal shoulder comprises an annular shoulder extending radially inwardly from an inner surface of said portion of the first part.

It is particularly preferable for said internal shoulder to comprise a first annular shoulder extending radially inwardly from an inner surface of said portion of the first part and a second annular shoulder extending radially inwardly from an inner surface of the remainder of the first part. Ideally, said portion of the first part of the structure and the remainder of the first part of the structure are discrete elements connected to one another by means of one or more fasteners extending through the first and second annular shoulders to form said flange.

Furthermore, in any of the mentioned arrangements, said portion of the first part of the structure and the remainder of the first part of the structure may be discrete elements.

In a preferred arrangement, the first part further comprises an elevated mass mounted to said elongate column and preferably to an upper end of said elongate column. The elevated mass may be a turbine, and is preferably a wind-turbine. The single point may be located below the centre of gravity of said elevated mass.

A second aspect of the present invention provides a structure comprising first and second parts connected to one another, the second part providing support for the first part; wherein the first part comprises an elongate column; and the second part comprises at least three elongate columns, and a transition device by means of which the first and second parts are connected; the transition device comprising at least three elongate struts secured relative to one another

by securing means, wherein the elongate struts are positioned about a portion of the first part of said structure which is connected to the second part of said structure; characterised in that each elongate column of the second part has a central longitudinal axis extending therefrom and each of said struts of the transition device has a central longitudinal axis extending therefrom, the axis of each elongate column of the second part being coincident with a different central longitudinal axis of said struts of the transition device.

A third aspect of the present invention provides a structure comprising first and second parts connected to one another, the second part providing support for the first part; wherein the first part comprises an elongate column; and the second part comprises at least three elongate columns, and a transition device by means of which the first and second parts are connected; the transition device comprising at least three elongate struts secured relative to one another by securing means, wherein the elongate struts are positioned about a portion of the first part of said structure which is connected to the second part of said structure; characterised in that a central longitudinal axis of each elongate column of the second part extends from the associated column to converge on a single point located below the centre of gravity of an elevated mass mounted to said elongate column of the first part.

A fourth aspect of the present invention provides a structure comprising first and second parts connected to one another, the second part providing support for the first part; wherein the first part comprises an elongate column; and the second part comprises at least three elongate columns, and a transition device by means of which the first and second parts are connected; the transition device comprising at least three elongate struts secured relative to one another by securing means, wherein the elongate struts are positioned about a portion of the first part of said structure which is connected to the second part of said structure; characterised in that said portion of the first part is connected to at least one of said elongate struts by means of one or more web members.

A fifth aspect of the present invention provides a structure comprising first and second parts connected to one another, the second part providing support for the first part; wherein the first part comprises an elongate column; and the second part comprises at least three elongate columns, and a transition device by means of which the first and second parts are connected; the transition device comprising at least three elongate struts secured relative to one another by securing means, wherein the elongate struts are positioned about a portion of the first part of said structure which is connected to the second part of said structure; characterised in that the first part of said structure comprises a flange adjacent which the first securing means is located.

Further features of the present invention are provided as recited in any of the appended dependent claims.

An embodiment of the present invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a schematic side view of an offshore wind-turbine provided on a support jacket structure in accordance with the present invention;

Figure 2 is an enlarged schematic view of the support structure shown in Figure 1;

Figure 3 is a perspective view of a transition device, as shown in Figure 1, for connecting a mast (shown partially) of the wind-turbine to a support jacket structure (shown partially);

Figure 4 is a schematic side view of the partial perspective view of Figure 3;

Figure 5 is a plan view of the partial side view of Figure 4;

Figure 6 is a cross-sectional partial side view taken along line A - A in Figure 5; and

Figure 7 is a plan view of the support jacket structure shown in Figures 1 and 2.

A wind-turbine installation 2 according to the present invention is shown in Figure 1 of the accompanying drawings. The installation is of a type which is located offshore and comprises a structure 4 mounted to foundation piles 6 pre-driven into a seabed 8.

The structure 4 comprises a first (upper) part 10 which is secured to a second (lower) part 12 by means of a transition device 14.

The first part 10 of the structure 4 includes a wind-turbine 24 mounted in a conventional fashion to an elongate column or mast 16. The mast 16 is generally cylindrical in shape and arranged in a vertical orientation. The specific dimensions of the mast 16 will vary depending on the size of the wind-turbine, however one example of a mast 16 has an outer diameter 102 of 5500 mm (see Figure 2) and a wall thickness 104 of 55 mm (see Figure 6).

The wind-turbine 24 is of a conventional type and the detail thereof will therefore be apparent to a reader skilled in the art and will not be described further herein. A nacelle 18, hub 20 and plurality of blades 22 associated with the wind-turbine 24 are shown in Figure 1 of the accompanying drawings.

With regard to the mast 16, a lower end portion 26 thereof is provided as a separate element to the remainder 28 of the mast 16. As is most clearly shown in Figure 6, an annular-shaped shoulder 30 extends radially inwardly from an inner cylindrical surface 32 of the lower end portion 26. The shoulder 30 of the lower end portion 26 of the mast 16 provides a flange for mating with the remainder (or remaining portion) 28 of the mast 16. In this latter regard, a second annular-shaped shoulder 34 is provided so as to extend radially inwardly

from a cylindrical inner surface 36 of the remainder 28 of the mast 16. The second shoulder 34 provides a flange on the lower end of the remainder 28 of the mast 16 for mating with the first shoulder 30 of the lower end portion 26.

The two shoulders 30,34 are provided with a plurality of boltholes positioned about a longitudinal axis 38 of the mast 16. The boltholes of the two shoulders 30,34 align with one another when the two shoulders 30,34 are mated to one another and each aligned pair of boltholes 30,34 thereby allows reception of a threaded bolt 40 (or other suitable fastener) therethrough. Only one bolt 40 (and associated nut) is shown in the partial cross-sectional view of Figure 6.

It will be appreciated that, whilst Figure 6 is a cross-sectional view taken along line A - A in Figure 5 of the accompanying drawings, only the lower end portion 26 of the first part 10 of the structure 4 is shown in Figure 5 without the remainder 28 of the mast 16 (with both the lower end portion 26 and the remainder 28 of the mast 16 being partially shown in Figure 6).

It will be understood that, by mating and subsequently fastening the two shoulders 30,34 in abutment with one another as shown in Figure 6, the lower end portion 26 and remainder 28 of the mast 16 are secured to one another. As will become apparent from the subsequent description, securing the lower end portion 26 and remainder 28 of the mast 16 in this way results in the remainder 28 of the mast 16 also being secured to the transition device 14 and, in turn, to the second lower part 12 of the structure 4.

The second part 12 of the structure 4 is a trusswork of steel tubulars which is mounted to the piles 6 in the seabed 8. The trusswork forms a jacket structure on which the mast 16 is mounted.

The trusswork is a four-legged structure, however it will be understood that an alternative number of legs may be provided (for example, some applications will be more suited to a three-legged structure). Each leg is provided as a

straight steel tubular or column 42. The columns or legs 42 are arranged relative to one another so as to define a frusto-conical shape. Furthermore the legs 42 are arranged so that a longitudinal axis 44 of each leg 42 extends from the associated leg 42 and intersects with the longitudinal axis 38 of the mast 16. The longitudinal axes 44 of the legs 42 extend from the associated legs 42 and intersect with the longitudinal axis 38 of the mast 16 at the same point 46 (see Figure 1). This point 46 is located below the centre of gravity of wind-turbine 24.

The extended longitudinal axis 44 of each leg 42 forms an included angle 48 with the longitudinal axis 38 of the mast 16. The included angle 48 is the same for each leg 42. Similarly, the extended longitudinal axis 44 of each leg 42 forms an included angle 50 with the longitudinal axis 44 of an adjacent leg 42, wherein the pair of adjacent legs 42 are connected to one another by diagonally extending brace members 52. The included angle 50 between each pair of adjacent legs 42 is the same for each leg pair. It will be understood therefore that the trusswork, in this embodiment, is a symmetrical structure which is arranged symmetrically about the longitudinal axis 38 of the mast 16. In other words, the second part 12 has a longitudinal axis which is coincident with the longitudinal axis 38 of the mast 16. In an alternative embodiment, the trusswork may have an asymmetric character, particularly in circumstances where there is a dominant prevailing wind direction.

Each pair of adjacent legs 42 are connected to one another by four sets (or bays) of brace members 52. Each set of brace members includes two crossing members which extend diagonally from one leg 42 to the adjacent leg 42. It will be appreciated that a different number of bays may be used (for example, the use of three bays may be more appropriate for shallow waters where a shorter trusswork structure is needed than for deeper waters).

The first and second parts 10,12 of the structure 4 are connected to one another by means of a transition device 14. A perspective view of the transition device

14 is shown in Figure 3 of the accompanying drawings, and a corresponding side view is shown in Figure 4.

The transition device 14 includes a lower plate member 60 and an upper plate member 62. The plate members 60,62 are planar. The members 60,62 may be manufactured from steel.

In the particular embodiment shown in the accompanying drawings, the plate members 60,62 have a square shape with rounded corners. The two plates 60,62 are of the same size, however the lower plate member 60 is provided with lobes 64 at the corners thereof. The lobes 64 provide a part-circular edge to the lower plate 60 which has a greater radius than the rounded (part-circular) corners of the upper plate 62. The lobes 64 enlarge the planform of the lower plate member 60 beyond the square shape so as to allow for reception of diagonal tubular struts 66. The way in which the lobes 64 extend the planform of the lower plate member 60 can be readily seen from the plan view shown in Figure 5 of the accompanying drawings.

In an alternative embodiment (not shown), the lower plate member (and, optionally, the upper plate member) may be larger than shown in the accompanying drawings. The larger lower plate member no longer has the lobes 64 since the larger planform of the plate member obviates the need for them. The larger lower plate member has a square shape with rounded corners (similar to that of the upper plate member 62). The plate members 60,62 may have alternative shapes which may be dictated by the number of legs within the trusswork (for example, they may be triangular for a trusswork having three legs).

In the embodiment shown in the accompanying drawings, the upper plate member 62 is provided with an aperture 68 through which, in the assembled structure 4, the discrete portion 26 of the mast 16 is located. The aperture 68 has a circular shape located centrally in the plate member 62 and concentrically

with the longitudinal axes of the two parts 10,12 of the structure 4. The diameter of the aperture 68 is the same as the outer diameter of the mast 16, and the mast 16 is connected to the plate member 62 at the aperture 68 by suitable means, for example, by welding.

Each strut 66 is provided as a straight steel tubular or column. The dimensions of the struts 66 are selected depending upon the forces they will need to resist when supporting the mast 16. The columns or struts 66 are arranged relative to one another so as to define a frusto-conical shape. Furthermore the struts 66 are arranged so that a longitudinal axis 70 of each strut 66 (see Figures 4 and 5) extends from the associated strut 66 and intersects with the longitudinal axis 38 of the mast 16. The longitudinal axes 70 of the struts 66 extend from the associated struts 66 and intersect with the longitudinal axis 38 of the mast 16 at the same point 46, and at the same point as the extended longitudinal axes 44 of the legs 42 (see Figure 1).

The extended longitudinal axis 70 of each strut 66 forms an included angle 72 with the longitudinal axis 38 of the mast 16 (see Figure 4). In the embodiment shown in the accompanying drawings, the included angle 72 is the same for each strut 66, and is also the same as the corresponding included angle 48 associated with the legs 42. Furthermore, the extended longitudinal axis 70 of each strut 66 forms an included angle 74 with the longitudinal axis 70 of an adjacent strut 66. The included angle 74 between each pair of adjacent struts 66 is the same for each strut pair in the present embodiment. It will be understood therefore that the transition device 14 of the present embodiment is a symmetrical structure which is arranged symmetrically about the longitudinal axis of the trusswork and the longitudinal axis 38 of the mast 16. In other words, the transition device 14 has a longitudinal axis which is coincident with the longitudinal axis of the trusswork and the longitudinal axis 38 of the mast 16.

Furthermore, each strut 66 is arranged so that its longitudinal axis 70 is coincident with the longitudinal axis 44 of a different one of the four legs 42. In this way, the struts 66 are positioned in line with the legs 42 and essentially form a continuation of the legs 42 through the lobes 64 of the lower plate member 60 to the corners of the upper plate member 62. The struts 66 are provided integrally with the legs 42 (in other words, they are continuous with the legs 42 with each leg 42 and its associated strut 66 being a unitary member). In an alternative embodiment, the struts 66 are provided as discrete members (in other words, they are separate from their associated legs).

It will be understood that, if the number of legs 42 is varied, then the number of struts 66 will be similarly varied so that each leg is effectively continued through the transition device 14 by an associated strut 66.

The lower plate member 60 is secured to lower ends of the struts 66, whilst the upper plate member 62 is secured to the upper ends of the struts 66. The plate members 60,62 may be secured to the struts 66 by means of welding. The relative positions of the struts 66 are thereby maintained.

Furthermore, each strut 66 is connected along its full length between the two plate members 60,62 to the discrete portion 26 of the mast 16 by means of web portions 80,82 (see Figures 4 and 5). The web portions 80,82 associated with a particular strut 66 are planar and, in the present embodiment, lie in planes which are parallel to one another. The web portions 80,82 may also be secured to the lower and upper plate members 60,62. The web portions 80,82 may be secured by means of welding. It will be appreciated therefore that, when the discrete portion 26 of the mast 16 receives the remainder 28 of the mast 16 as described above, the transition device 14 and first part 10 of the structure 4 are connected to one another. In turn, the first and second parts 10,12 of the structure 4 are connected to one another.

It will be seen from the accompanying drawings that the lower and upper plate members 60,62 are arranged one above the other in parallel planes. The plate members 60,62 are spaced from one another in a longitudinal direction. The plate members 60,62 may also be provided with apertures for receiving the struts 66. In a prefered embodiment, the upper plate member 62 is not provided with apertures for the struts 66. In this case, the struts 66 are connected (for example, by means of welding) to the underside of the upper plate member 62. Furthermore, the upper plate member 62 receives the upper ends of the struts 66 at locations coincident with or proximate to the edge of the aperture 68 in the upper plate 62. Specifically, a radially innermost part (with respect to the centre of the upper plate member 62) of the outer circumference of each strut 66 may be coincident with, or marginally spaced from, the circumferential edge of the aperture 68 in the upper plate 62. This arrangement allows the lateral dimension (i.e. width) of the transition device 14 and the trusswork to be minimised.

It will be appreciated that the position of the upper ends of the struts 66 relative to the mast 16 (and, therefore, to the aperture 68) should be maintained independently of the height of the trusswork, or the spacing of the piles 6. The alignment of the struts 66 with the legs 42 should also be maintained.

In addition, the shoulder 30 provided on the end of the discrete portion 26 of the mast 16 is provided with a longitudinal position which is coincident with the longitudinal position of the upper plate member 62. The shoulders 30,34 provided within the mast 16 provide the mast 16 with structural reinforcement which assists in resisting forces applied to the mast 16 by the upper plate member 62 in that region.

Upper and lower circumferences of the portion 26 of the mast 16 may be secured to the upper and lower plate members 62,60 respectively by, for example, welding.

Regarding the piles 6 of the particular embodiment shown in the accompanying drawings, these are pre-driven into the seabed 8 prior to the second part 12 being installed thereon. More specifically, the piles 6 are positioned using a template and cut level, and then the second part 12 is stabbed into the piles 6 and grouted in position. It will be appreciated that other types of foundation may be used depending upon the nature of the site.

The present invention is not limited to the specific embodiment described above. Alternative arrangements and suitable materials will be apparent to a reader skilled in the art. In one alternative embodiment, where the upper plate member 62 is not present, the upper ends of the struts may blend into the discrete portion 26 of the mast 16. Ideally, the upper ends of the struts blend entirely into the discrete portion 26 so that the entire circumference of a strut intersects with the discrete portion 26. This circumferential interface between the struts and the discrete portion 26 may be secured with welding along said interface. In a further alternative embodiment, neither the upper plate member 62 nor the lower plate member 60 are present. In this latter embodiment, it will be understood that the struts 66 are retained in position by means of their mounting to their respective legs and by means of their respective web portions 80,82. The upper ends of the struts may blend into the discrete portion 26 of the mast 16 as described above. In each of the embodiments described, the web portions 80,82 provide means for connecting the length (or at least a part of the length) of the struts 66 to the discrete portion 26 of the mast 16. In this way, the web portions 80,82 provide means by which the relative positions of the struts are secured/retained.

CLAIMS:

1. A structure (4) comprising first and second parts (10, 12) connected to one another, the second part (12) providing support for the first part (10); wherein the first part (10) comprises an elongate column (16); and the second part (12) comprises at least three elongate columns (42), and a transition device (14) by means of which the first and second parts (10, 12) are connected; the transition device (14) comprising at least three elongate struts (66) secured relative to one another by securing means, wherein the elongate struts (66) are positioned about a portion (26) of the first part (10) of said structure (4) which is connected to the second part (12) of said structure (4); characterised in that a central longitudinal axis (44) of each elongate column (42) of the second part (12) extends from the associated column (42) to converge on a single point (46) and define an included angle (50) therebetween, and each of said struts (66) has a central longitudinal axis (70) extending therefrom to converge on said single point (46) and define an included angle (74) substantially equal to said included angle (50) of the elongate columns (42) of the second part (12).

2. A structure (4) as claimed in claim 1, wherein the axis (44) of each elongate column (42) of the second part (12) is coincident with a different central longitudinal axis (70) of said struts (66) of the transition device (14).

3. A structure (4) as claimed in claim 1 or 2, wherein said single point (46) is coincident with a central longitudinal axis (38) of the elongate column (16) of the first part (10).

4. A structure (4) as claimed in claim 3, wherein the axes (44) of the second part (12) make the same included angle (48) with the central longitudinal axis (38) of the elongate column (16) of the first part (10).

5. A structure (4) as claimed in any of the preceding claims, wherein said securing means comprises first securing means (60) positioned at a first location

along the lengths of the elongate struts (66) and second securing means (62) positioned at a second location along the lengths of the elongate struts (66).

6. A structure (4) as claimed in any of the preceding claims, wherein first securing means (60) of the securing means is positioned at first ends of the elongate struts (66), wherein said first ends are preferably lower ends of the elongate struts (66).

7. A structure (4) as claimed in claim 6, wherein second securing means (62) of the securing means is positioned at second ends of the elongate struts (66), the second ends being distal to the first ends.

8. A structure (4) as claimed in claim 6 or 7 when dependent on claim 5, wherein said portion (26) of the first part (10) of the structure (4) is positioned between the first and second securing means (60,62).

9. A structure (4) as claimed in any of claims 5 to 8, wherein each first and second securing means (60,62) is a unitary member.

10. A structure (4) as claimed in claim 9, wherein each unitary member is a generally planar plate.

11. A structure (4) as claimed in claim 9 or 10, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends.

12. A structure (4) as claimed in claim 9 or 10, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends, and the other one of said securing means (60) defines a bulkhead against which an end of said portion (26) of the first part (10) abuts.

13. A structure (4) as claimed in any of the preceding claims, wherein said portion (26) of the first part (10) of said structure (4) is connected to at least one elongate strut (66), and is preferably connected to each elongate strut (66).

14. A structure (4) as claimed in claim 13, wherein said connection between said portion (26) of the first part (10) of said structure (4) and an elongate strut (66) is provided along the full length of said elongate strut (66).

15. A structure (4) as claimed in claim 13 or 14, wherein said connection between the first part (10) and an elongate strut (66) is made by means of one or more planar web members (80, 82).

16. A structure (4) as claimed in claim 15, wherein said portion (26) of the first part (10) of said structure (4) is connected to an elongate strut (66) by means of two planar web members (80, 82).

17. A structure (4) as claimed in any of the preceding claims, wherein the elongate columns (42) of the second part (12) are arranged relative to one another so as to define a frusto-conical shape; and preferably wherein said struts (66) are arranged relative to one another so as to define a frusto-conical shape.

18. A structure (4) as claimed in any of the preceding claims, wherein the first part (10) of said structure (4) comprises a flange adjacent which the first securing means (60) is located.

19. A structure (4) as claimed in claim 18, wherein said flange is an annular shaped internal shoulder which extends radially inwardly from an inner surface (32) of the first part (10).

20. A structure (4) as claimed in claim 19, wherein said securing means abuts an outer surface of the first part (10) in a region concentric with said annular shaped internal shoulder.

21. A structure (4) as claimed in claim 19 or 20, wherein said internal shoulder comprises an annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10).

22. A structure (4) as claimed in claim 20, wherein said internal shoulder comprises a first annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10) and a second annular shoulder (34) extending radially inwardly from an inner surface (36) of the remainder (28) of the first part (10).

23. A structure (4) as claimed in claim 22, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements connected to one another by means of one or more fasteners (40) extending through the first and second annular shoulders (30, 34) to form said flange.

24. A structure (4) as claimed in any of claims 1 to 22, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements.

25. A structure (4) as claimed in any of the preceding claims, wherein the first part (10) further comprises an elevated mass mounted to an upper end of said elongate column (16) of the first part.

26. A structure (4) as claimed in claim 26, wherein said elevated mass is a turbine, and preferably a wind-turbine (24).

27. A structure (4) as claimed in claim 25 or 26, wherein said single point (46) is located below the centre of gravity of said elevated mass.

28. A structure (4) comprising first and second parts (10,12) connected to one another; the second part (12) providing support for the first part (10); wherein the first part (10) comprises an elongate column (16); and the second part (12) comprises at least three elongate columns (42), and a transition device (14) by means of which the first and second parts (10,12) are connected; the transition device (14) comprising at least three elongate struts (66) secured relative to one another by securing means, wherein the elongate struts (66) are positioned about a portion (26) of the first part (10) of said structure (4) which is connected to the second part (12) of said structure (4); characterised in that each elongate column (42) of the second part (12) has a central longitudinal axis (44) extending therefrom and each of said struts (66) of the transition device (14) has a central longitudinal axis (70) extending therefrom, the axis of each elongate column (42) of the second part (12) being coincident with a different central longitudinal axis (70) of said struts (66) of the transition device (14).

29. A structure (4) as claimed in claim 28, wherein the first part (10) further comprises an elevated mass mounted to an upper end of said elongate column (16) of the first part (10).

30. A structure (4) as claimed in claim 29, wherein said elevated mass is a turbine, and preferably a wind-turbine (24).

31. A structure (4) as claimed in any of claims 28 to 30, wherein the axes of the second part (12) of said structure (4) converge to a single point (46).

32. A structure (4) as claimed in claim 31, wherein said single point (46) is coincident with a central longitudinal axis (44) of the elongate column (42) of the first part (10).

33. A structure (4) as claimed in claim 32, wherein the axes of the second part (12) make the same included angle with the central longitudinal axis (44) of the elongate column (42) of the first part (10).

34. A structure (4) as claimed in any of claims 31 to 33 when dependent on claim 29 or 30, wherein said single point (46) is located below the centre of gravity of said elevated mass.

35. A structure (4) as claimed in any of claims 28 to 34, the securing means comprises first securing means (60) positioned at a first location along the lengths of the elongate struts (66) and second securing means (62) positioned at a second location along the lengths of the elongate struts (66),

36. A structure (4) as claimed in any of claims 28 to 35, wherein first securing means (60) of said securing means is positioned at first ends of the elongate struts (66), the first ends preferably being lower ends of the struts.

37. A structure (4) as claimed in claim 33, wherein second securing means (62) of said securing means is positioned at second ends of the elongate struts (66), the second ends being distal to the first ends.

38. A structure (4) as claimed in any of claims 35 to 37, wherein said portion (26) of the first part (10) of the structure (4) is positioned between the first and second securing means (60, 62).

39. A structure (4) as claimed in any of claims 35 to 38, wherein each first and second securing means (60, 62) is a unitary member.

40. A structure (4) as claimed in claim 39, wherein each unitary member is a generally planar plate.

41. A structure (4) as claimed in claim 39 or 40, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends.

42. A structure (4) as claimed in claim 39 or 40, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends, and the other one of said securing means (60) defines a bulkhead against which an end of said portion (26) of the first part (10) abuts.

43. A structure (4) as claimed in any of claims 28 to 42, wherein said portion (26) of the first part (10) of said structure (4) is connected to at least one elongate strut (66), and is preferably connected to each elongate strut (66).

44. A structure (4) as claimed in claim 43, wherein said connection between said portion (26) of the first part (10) of said structure (4) and an elongate strut (66) is provided along the full length of said elongate strut (66).

45. A structure (4) as claimed in claim 43 or 44, wherein said connection between the first part (10) and an elongate strut (66) is made by means of one or more planar web members (80, 82).

46. A structure (4) as claimed in claim 45, wherein said portion (26) of the first part (10) of said structure (4) is connected to an elongate strut (66) by means of two planar web members (80, 82).

47. A structure (4) as claimed in any of claims 28 to 46, wherein the elongate columns (42) of the second part (12) are arranged relative to one another so as to define a frusto-conical shape; and preferably wherein said struts (66) are arranged relative to one another so as to define a frusto-conical shape.

48. A structure (4) as claimed in any of claims 28 to 47, wherein the first part (10) of said structure (4) comprises a flange adjacent which the first securing means (60) is located.

49. A structure (4) as claimed in claim 48, wherein said flange is an annular shaped internal shoulder which extends radially inwardly from an inner surface (32) of the first part (10).

50. A structure (4) as claimed in claim 49, wherein said securing means abuts an outer surface of the first part (10) in a region concentric with said annular shaped internal shoulder.

51. A structure (4) as claimed in claim 49 or 50, wherein said internal shoulder comprises an annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10).

52. A structure (4) as claimed in claim 50, wherein said internal shoulder comprises a first annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10) and a second annular shoulder (34) extending radially inwardly from an inner surface (38) of the remainder (28) of the first part (10).

53. A structure (4) as claimed in claim 52, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements connected to one another by means of one or more fasteners (40) extending through the first and second annular shoulders (30, 34) to form said flange.

54. A structure (4) as claimed in any of claims 28 to 52, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements.

55. A structure (4) comprising first and second parts (10, 12) connected to one another, the second part (12) providing support for the first part (10); wherein the first part (10) comprises an elongate column; and the second part (12) comprises at least three elongate columns, and a transition device (14) by

means of which the first and second parts (10, 12) are connected; the transition device (14) comprising at least three elongate struts (66) secured relative to one another by securing means, wherein the elongate struts (66) are positioned about a portion (26) of the first part (10) of said structure (4) which is connected to the second part (12) of said structure (4); characterised in that a central longitudinal axis (44) of each elongate column (42) of the second part (12) extends from the associated column to converge on a single point (46) located below the centre of gravity of an elevated mass mounted to said elongate column of the first part (10).

56. A structure (4) as claimed in claim 55, wherein the axis of each elongate column of the second part (12) is coincident with a different central longitudinal axis (70) of said struts (66) of the transition device (14).

57. A structure (4) as claimed in claim 55 or 56, wherein said single point (46) is coincident with a central longitudinal axis (38) of the elongate column (16) of the first part (10), and preferably wherein the axes of the second part (12) make the same included angle (74) with the central longitudinal axis (38) of the elongate column (16) of the first part (10).

58. A structure (4) as claimed in any of claims 55 to 57, wherein an included angle (50) is defined between the central longitudinal axes (44) of the elongate columns (42) of the second part (12) and each of said struts (66) has a central longitudinal axis (70) extending therefrom to converge on said single point (46) and define an included angle (74) substantially equal to said included angle (50) of the elongate columns (42) of the second part (12).

59. A structure (4) as claimed in any of claims 55 to 58, wherein the securing means comprise first securing means (60) positioned at a first location along the lengths of the elongate struts (66) and second securing means (62) positioned at a second location along the lengths of the elongate struts (66).

60. A structure (4) as claimed in any of claims 55 to 60, wherein first securing means (60) of said securing means is positioned at first ends of the elongate struts (66), the first ends preferably being lower ends of the struts.

61. A structure (4) as claimed in claim 60, wherein second securing means (62) of the securing means is positioned at second ends of the elongate struts (66), the second ends being distal to the first ends.

62. A structure (4) as claimed in any of claim 59 to 61, wherein said portion (26) of the first part (10) of the structure (4) is positioned between the first and second securing means (60, 62).

63. A structure (4) as claimed in any of claims 59 to 62, wherein each first and second securing means (60, 62) is a unitary member.

64. A structure (4) as claimed in claim 63, wherein each unitary member is a generally planar plate.

65. A structure (4) as claimed in claim 63 or 64, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends.

66. A structure (4) as claimed in claim 63 or 64, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends, and the other one of said securing means (60) defines a bulkhead against which an end of said portion (26) of the first part (10) abuts.

67. A structure (4) as claimed in any of claims 55 to 66, wherein said portion (26) of the first part (10) of said structure (4) is connected to at least one elongate strut (66), and is preferably connected to each elongate strut (66).

68. A structure (4) as claimed in claim 67, wherein said connection between said portion (26) of the first part (10) of said structure (4) and an elongate strut (66) is provided along the full length of said elongate strut (66).

69. A structure (4) as claimed in claim 67 or 68, wherein said connection between the first part (10) and an elongate strut (66) is made by means of one or more planar web members (80, 82).

70. A structure (4) as claimed in claim 69, wherein said portion (26) of the first part (10) of said structure (4) is connected to an elongate strut (66) by means of two planar web members (80, 82).

71. A structure (4) as claimed in any of claims 55 to 70, wherein the elongate columns (42) of the second part (12) are arranged relative to one another so as to define a frusto-conical shape.

72. A structure (4) as claimed in claim 71, wherein said struts (66) are arranged relative to one another so as to define a frusto-conical shape.

73. A structure (4) as claimed in any of claims 55 to 72, wherein the first part (10) of said structure (4) comprises a flange adjacent which the first securing means (60) is located.

74. A structure (4) as claimed in claim 73, wherein said flange is an annular shaped internal shoulder which extends radially inwardly from an inner surface (32) of the first part (10).

75. A structure (4) as claimed in claim 74, wherein said securing means abuts an outer surface of the first part (10) in a region concentric with said annular shaped internal shoulder.

76. A structure (4) as claimed in claim 74 or 75, wherein said internal shoulder comprises an annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10).

77. A structure (4) as claimed in claim 75, wherein said internal shoulder comprises a first annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10) and a second annular shoulder (34) extending radially inwardly from an inner surface (36) of the remainder (28) of the first part (10).

78. A structure (4) as claimed in claim 77, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements connected to one another by means of one or more fasteners (40) extending through the first and second annular shoulders (30, 34) to form said flange.

79. A structure (4) as claimed in any of claims 55 to 77, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements.

80. A structure (4) as claimed in any of claims 55 to 79, wherein said elevated mass is mounted to an upper end of said elongate column of said first part (10).

81. A structure (4) as claimed in claim 80, wherein said elevated mass is a turbine, and preferably a wind-turbine (24).

82. A structure (4) comprising first and second parts (10, 12) connected to one another, the second part (12) providing support for the first part (10); wherein the first part (10) comprises an elongate column; and the second part (12) comprises at least three elongate columns, and a transition device (14) by means of which the first and second parts (10, 12) are connected; the transition

device (14) comprising at least three elongate struts (66) secured relative to one another by securing means, wherein the elongate struts (66) are positioned about a portion (26) of the first part (10) of said structure (4) which is connected to the second part (12) of said structure (4); characterised in that the securing means comprise one or more web members (80, 82), wherein said portion (26) of the first part (10) is connected to at least one of said elongate struts (66) by means of said one or more web members (80, 82).

83. A structure (4) as claimed in claim 82, wherein said connection between said portion (26) and elongate strut (66) is provided along the full length of said elongate strut (66).

84. A structure (4) as claimed in claim 82 or 83, wherein said connection is provided by means of two planar web members (80, 82) extending between said portion (26) of the first part (10) of said structure (4) and an elongate strut (66).

85. A structure (4) as claimed in any of claims 82 or 84, wherein a central longitudinal axis (44) of each elongate column (42) of the second part (12) extends from the associated column to converge on a single point (46) and define an included angle (50) therebetween, and each of said struts (66) has a central longitudinal axis (70) extending therefrom to converge on said single point (46) and define an included angle (74) substantially equal to said included angle (50) of the elongate columns of the second part (12).

86. A structure (4) as claimed in claim 85, wherein the axis (44) of each elongate column (42) of the second part (12) is coincident with a different central longitudinal axis (70) of said struts (66) of the transition device (14).

87. A structure (4) as claimed in claim 85 or 86, wherein said single point (46) is coincident with a central longitudinal axis (38) of the elongate column (16) of the first part (10).

88. A structure (4) as claimed in claim 87, wherein the axes (44) of the second part (12) make the same included angle with the central longitudinal axis (38) of the elongate column of the first part (10).

89. A structure (4) as claimed in any of claims 87 to 88, wherein said securing means comprises first securing means (60) positioned at a first location along the lengths of the elongate struts (66) and second securing means (62) positioned at a second location along the lengths of the elongate struts (66).

90. A structure (4) as claimed in any of claims 82 to 89, wherein first securing means (60) of said securing means is positioned at first ends of the elongate struts (66), the first ends preferably being lower ends of the struts (66).

91. A structure (4) as claimed in claim 90, wherein second securing means (62) of the securing means is positioned at second ends of the elongate struts (66), the second ends being distal to the first ends.

92. A structure (4) as claimed in claim 90 or 91, wherein said portion (26) of the first part (10) of the structure (4) is positioned between the first and second securing means (60, 62).

93. A structure (4) as claimed in any of claims 89 to 92, wherein each first and second securing means (60, 62) is a unitary member.

94. A structure (4) as claimed in claim 93, wherein each unitary member is a generally planar plate.

95. A structure (4) as claimed in claim 93 or 94, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends.

96. A structure (4) as claimed in claim 93 or 94, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends, and the other one of said securing means (60) defines a bulkhead against which an end of said portion (26) of the first part (10) abuts.

97. A structure (4) as claimed in any of claims 82 to 96, wherein the elongate columns (42) of the second part (12) are arranged relative to one another so as to define a frusto-conical shape.

98. A structure (4) as claimed in claim 97, wherein said struts (66) are arranged relative to one another so as to define a frusto-conical shape.

99. A structure (4) as claimed in any of claims 82 to 98, wherein the first part (10) of said structure (4) comprises a flange adjacent which the first securing means (60) is located.

100. A structure (4) as claimed in claim 99, wherein said flange is an annular shaped internal shoulder which extends radially inwardly from an inner surface (32) of the first part (10).

101. A structure (4) as claimed in claim 100, wherein the first securing means (60) abuts an outer surface of the first part (10) in a region concentric with said annular shaped internal shoulder.

102. A structure (4) as claimed in claim 100 or 101, wherein said internal shoulder comprises an annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10).

103. A structure (4) as claimed in claim 101, wherein said internal shoulder comprises a first annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10) and a second annular

shoulder (34) extending radially inwardly from an inner surface (36) of the remainder (28) of the first part (10), and preferably

104. A structure (4) as claimed in claim 103, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements connected to one another by means of one or more fasteners (40) extending through the first and second annular shoulders (30, 34) to form said flange.

105. A structure (4) as claimed in any of claims 82 to 103, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements.

106. A structure (4) as claimed in any of claims 82 to 105, wherein the first part (10) further comprises an elevated mass mounted to an upper end of said elongate column, and preferably wherein said elevated mass is a turbine, and more preferably a wind-turbine (24).

107. A structure (4) as claimed in claim 106 when dependent on any of claims 85 to 88, wherein said single point (46) is located below the centre of gravity of said elevated mass.

108. A structure (4) comprising first and second parts (10, 12) connected to one another, the second part (12) providing support for the first part (10); wherein the first part (10) comprises an elongate column; and the second part (12) comprises at least three elongate columns, and a transition device (14) by means of which the first and second parts (10, 12) are connected; the transition device (14) comprising at least three elongate struts (66) secured relative to one another by securing means, wherein the elongate struts (66) are positioned about a portion (26) of the first part (10) of said structure (4) which is connected to the second part (12) of said structure (4); characterised in that the first part

(10) of said structure (4) comprises a flange adjacent which the first securing means (60) is located.

109. A structure (4) as claimed in claim 108, wherein said flange is an annular shaped internal shoulder which extends radially inwardly from an inner surface (32) of the first part (10).

110. A structure (4) as claimed in claim 109, wherein first securing means (60) of the securing means abuts an outer surface of the first part (10) in a region concentric with said annular shaped internal shoulder.

111. A structure (4) as claimed in claim 109 or 110, wherein said internal shoulder comprises an annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10).

112. A structure (4) as claimed in claim 110, wherein said internal shoulder comprises a first annular shoulder (30) extending radially inwardly from an inner surface (32) of said portion (26) of the first part (10) and a second annular shoulder (34) extending radially inwardly from an inner surface (36) of the remainder (28) of the first part (10).

113. A structure (4) as claimed in claim 112, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements connected to one another by means of one or more fasteners (40) extending through the first and second annular shoulders (30, 34) to form said flange.

114. A structure (4) as claimed in any of claims 108 to 112, wherein said portion (26) of the first part (10) of the structure (4) and the remainder (28) of the first part (10) of the structure (4) are discrete elements.

115. A structure (4) as claimed in any of claims 108 to 114, wherein the first part (10) further comprises an elevated mass mounted to an upper end of said elongate column.

116. A structure (4) as claimed in claim 115, wherein said elevated mass is a turbine, and preferably a wind-turbine (24).

117. A structure (4) as claimed in any of claims 108 to 116, wherein a central longitudinal axis (44) of each elongate column (42) of the second part (12) extends from the associated column to converge on a single point (46) and define an included angle (50) therebetween, and each of said struts (66) has a central longitudinal axis (70) extending therefrom to converge on said single point (46) and define an included angle (74) substantially equal to said included angle (50) of the elongate columns of the second part (12).

118. A structure (4) as claimed in claim 117, wherein the axis (44) of each elongate column of the second part (12) is coincident with a different central longitudinal axis (70) of said struts (66) of the transition device (14).

119. A structure (4) as claimed in claim 117 or 118, wherein said single point (46) is coincident with a central longitudinal axis (38) of the elongate column (16) of the first part (10).

120. A structure (4) as claimed in claim 119, wherein the axes (44) of the second part (12) make the same included angle (48) with the central longitudinal axis (38) of the elongate column (16) of the first part (10).

121. A structure (4) as claimed in any of claims 119 to 120 when dependent on claims 115 or 116, wherein said single point (46) is located below the centre of gravity of said elevated mass of the first part (10).

122. A structure (4) as claimed in any of claims 108 to 121, wherein first securing means (60) of the securing means is positioned at a first location along the lengths of the elongate struts (66) and second securing means (62) of the securing means is positioned at a second location along the lengths of the elongate struts (66).

123. A structure (4) as claimed in claim 122, wherein the first securing means (60) is positioned at first ends of the elongate struts (66), the first ends preferably being lower ends of the struts (66).

124. A structure (4) as claimed in claim 120, wherein the second securing means (62) is positioned at second ends of the elongate struts (66), the second ends being distal to the first ends.

125. A structure (4) as claimed in any of claims 122 to 124, wherein said portion (26) of the first part (10) of the structure (4) is positioned between the first and second securing means (60, 62).

126. A structure (4) as claimed in claim 110 or any of claims 122 to 125, wherein the or each securing means is a unitary member.

127. A structure (4) as claimed in claim 126, wherein the or each unitary member is a generally planar plate.

128. A structure (4) as claimed in claim 126 or 127, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends.

129. A structure (4) as claimed in claim 126 or 127, wherein one of said securing means (62) is provided with an aperture (68) through which said portion (26) of the first part (10) extends, and the other one of said securing

means (60) defines a bulkhead against which an end of said portion (26) of the first part (10) abuts.

130. A structure (4) as claimed in any of claims 108 to 129, wherein said portion (26) of the first part (10) of said structure (4) is connected to at least one elongate strut (66), and is preferably connected to each elongate strut (66).

131. A structure (4) as claimed in claim 130, wherein said connection between said portion (26) of the first part (10) of said structure (4) and an elongate strut (66) is provided along the full length of said elongate strut (66).

132. A structure (4) as claimed in claim 130 or 131, wherein said connection between the first part (10) and an elongate strut (66) is made by means of one or more planar web members (80, 82).

134. A structure (4) as claimed in claim 132, wherein said portion (26) of the first part (10) of said structure (4) is connected to an elongate strut (66) by means of two planar web members (80, 82).

135. A structure (4) as claimed in any of claims 108 to 134, wherein the elongate columns (42) of the second part (12) are arranged relative to one another so as to define a frusto-conical shape.

136. A structure (4) as claimed in claim 135, wherein said struts (66) are arranged relative to one another so as to define a frusto-conical shape.

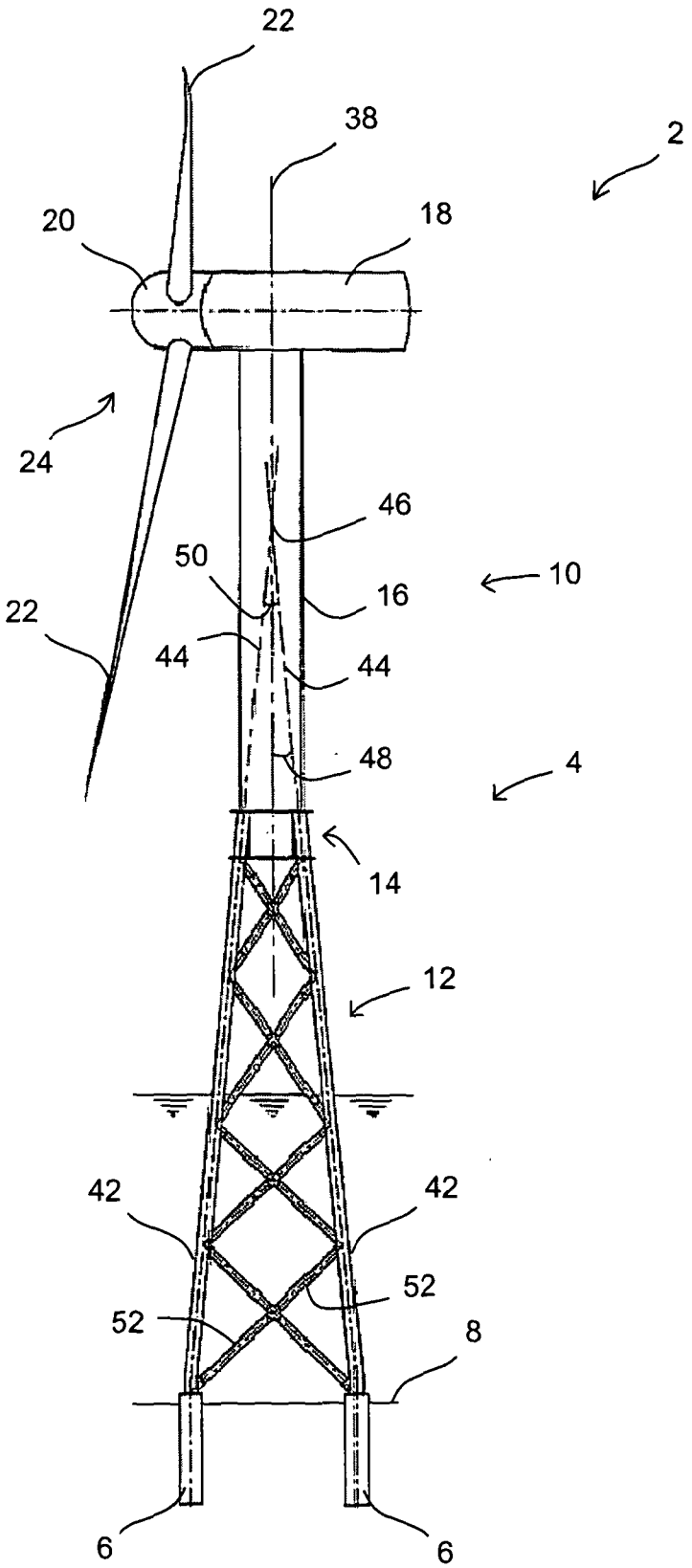


FIGURE 1

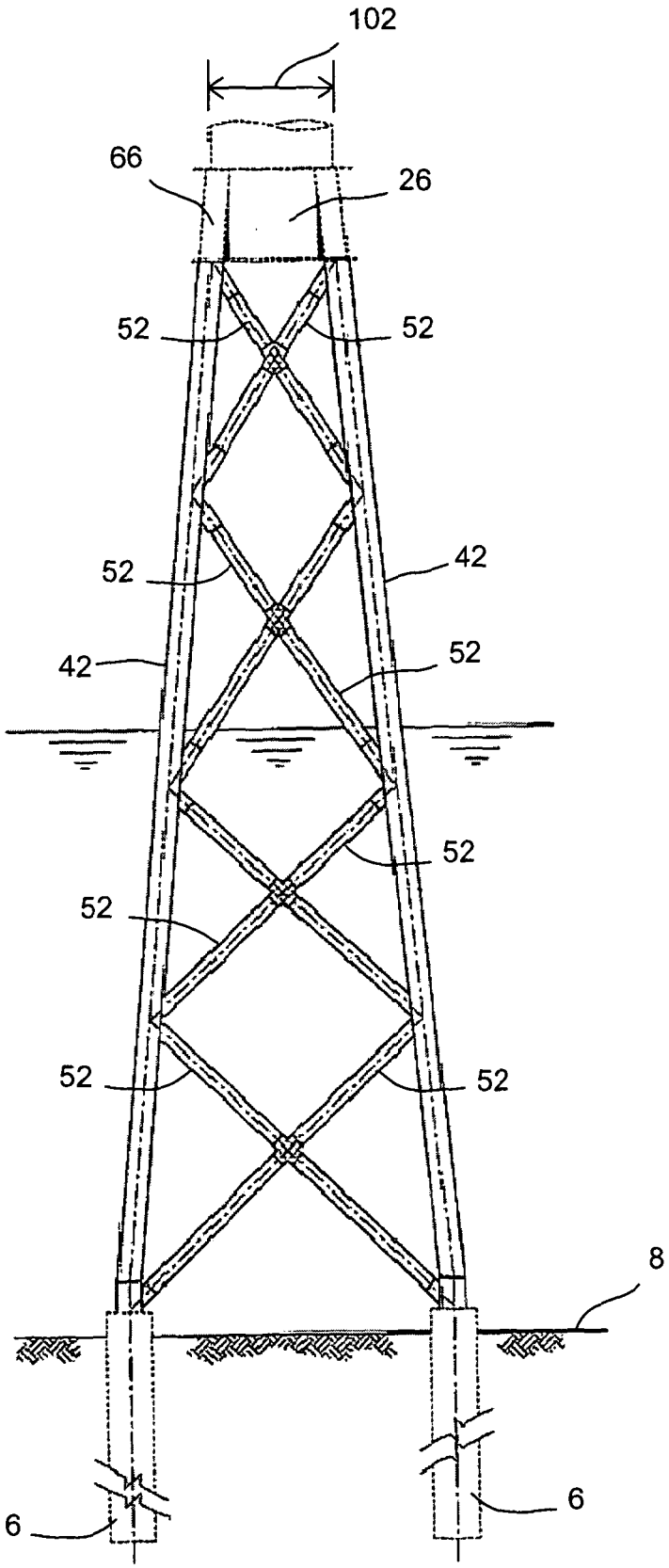


FIGURE 2

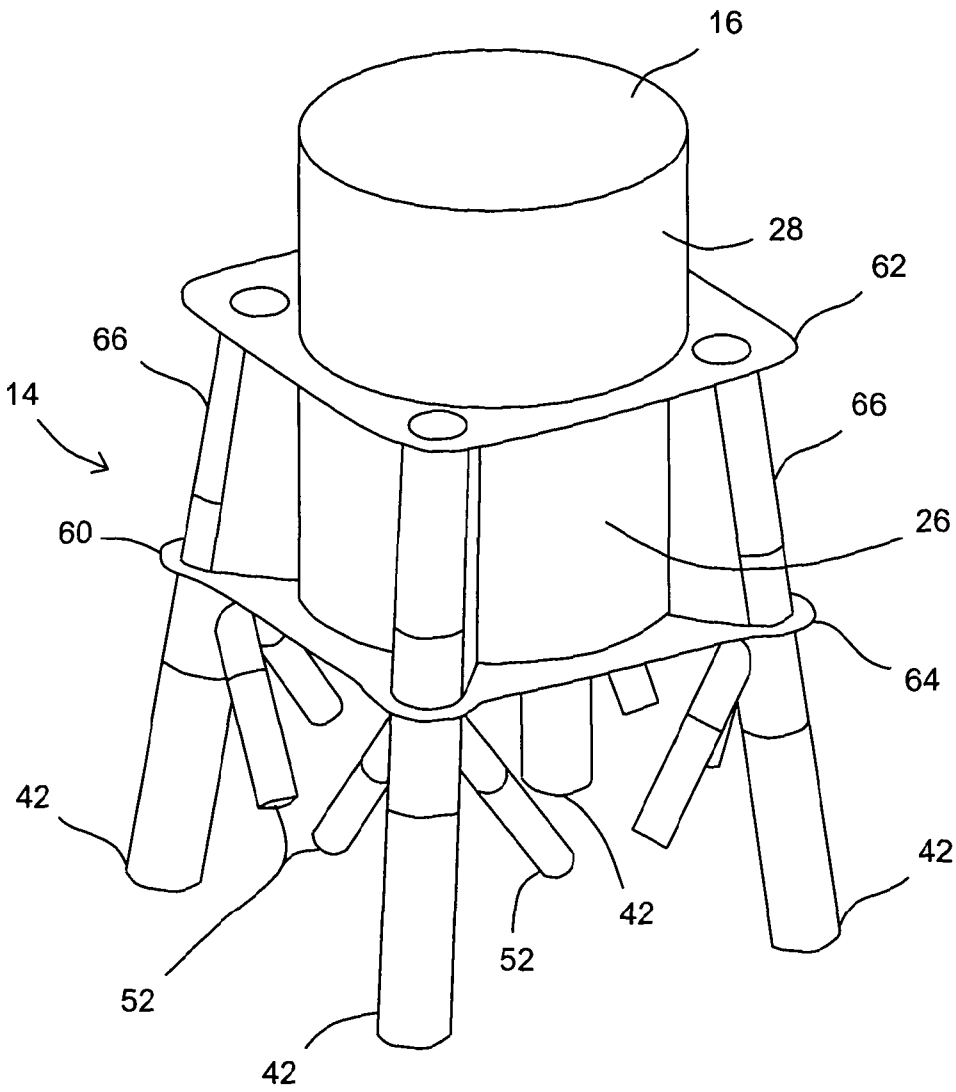


FIGURE 3

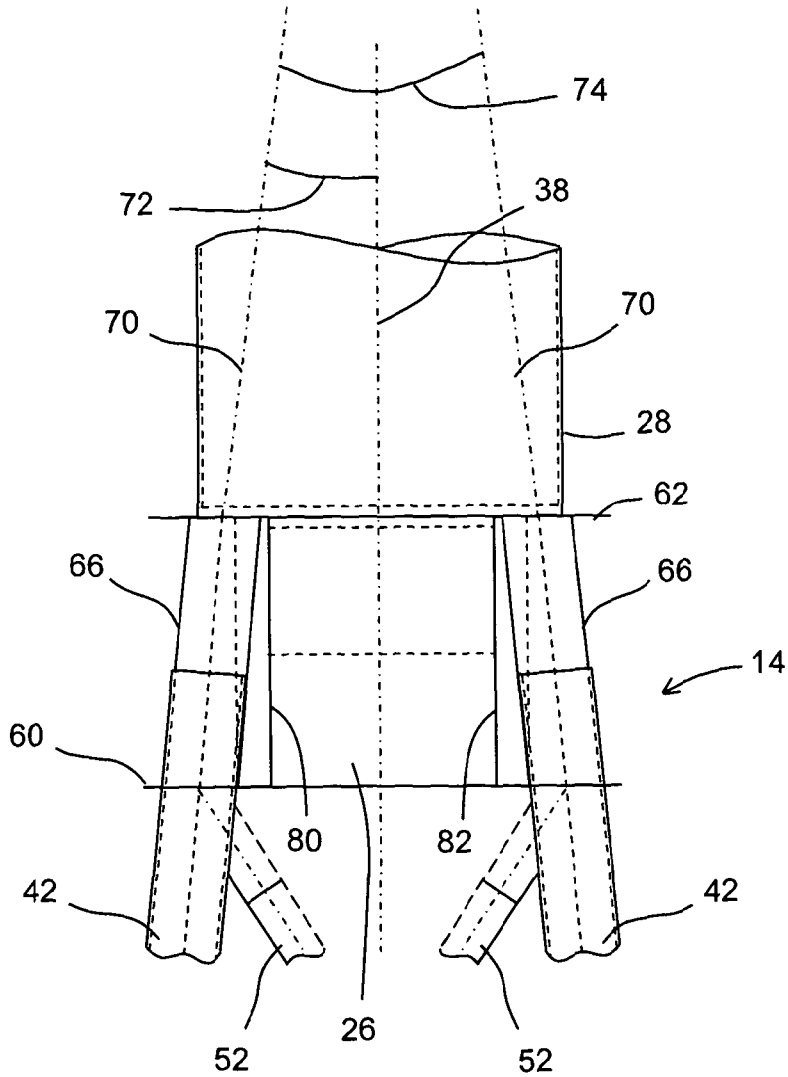


FIGURE 4

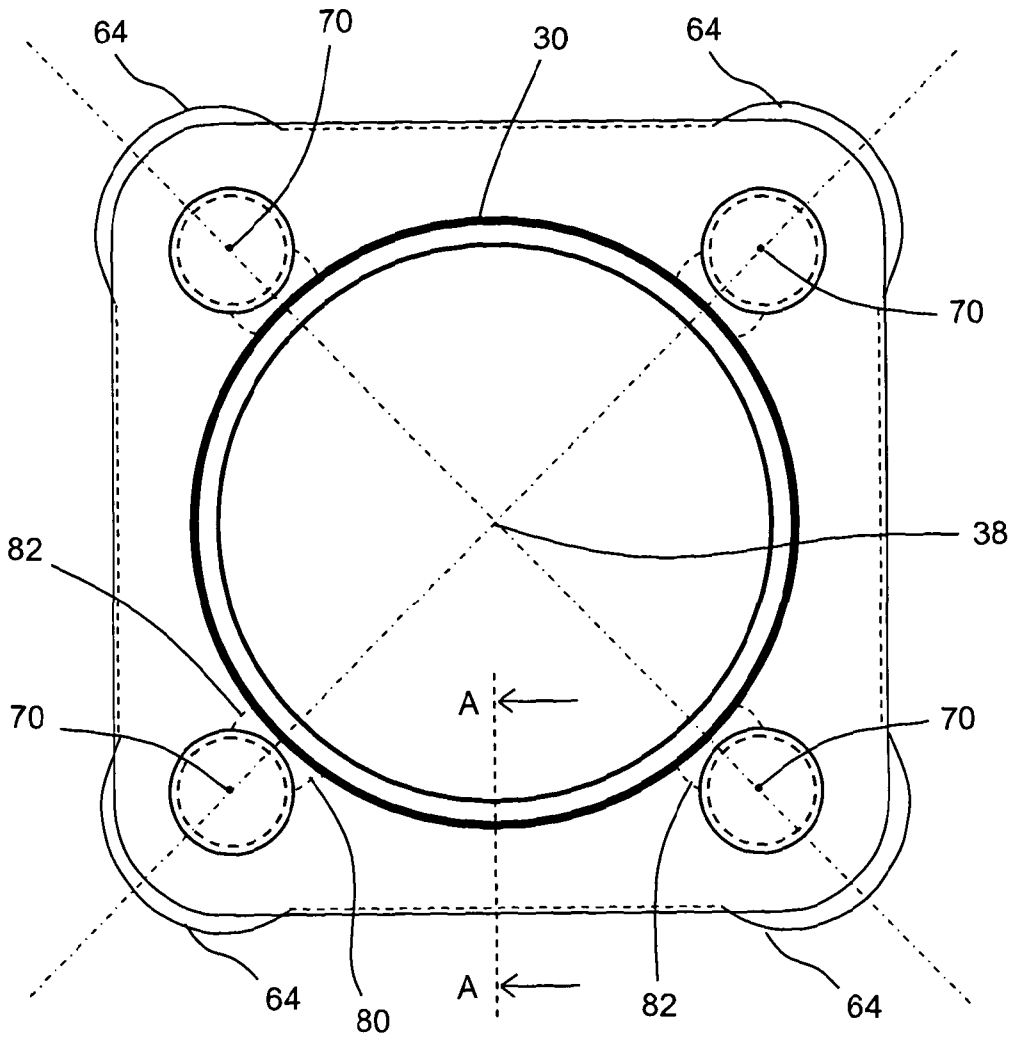


FIGURE 5

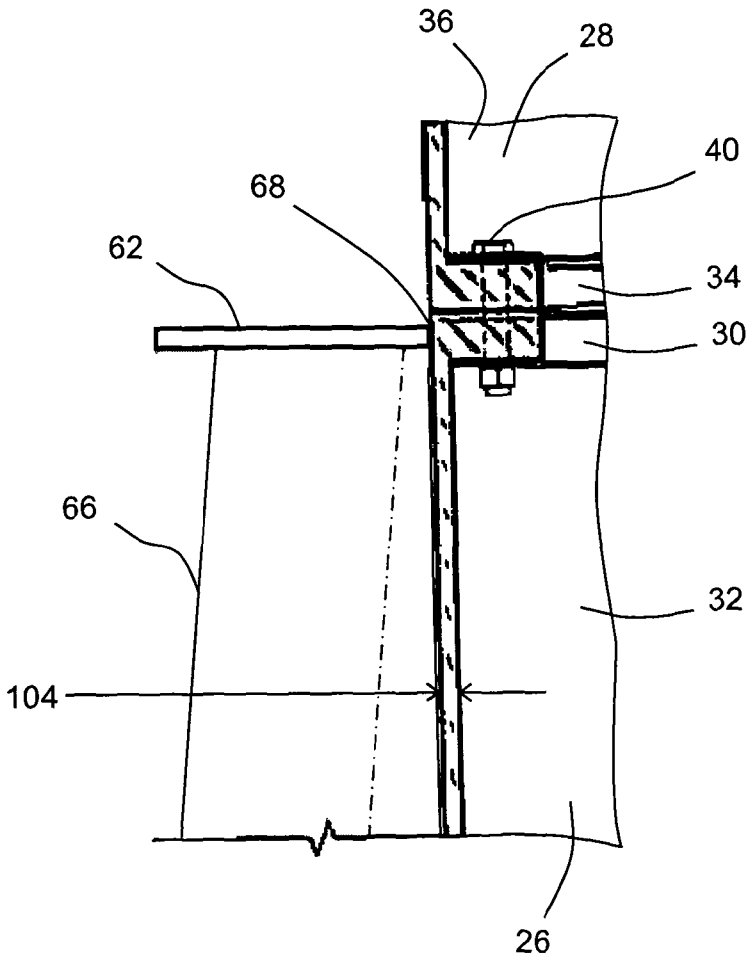


FIGURE 6

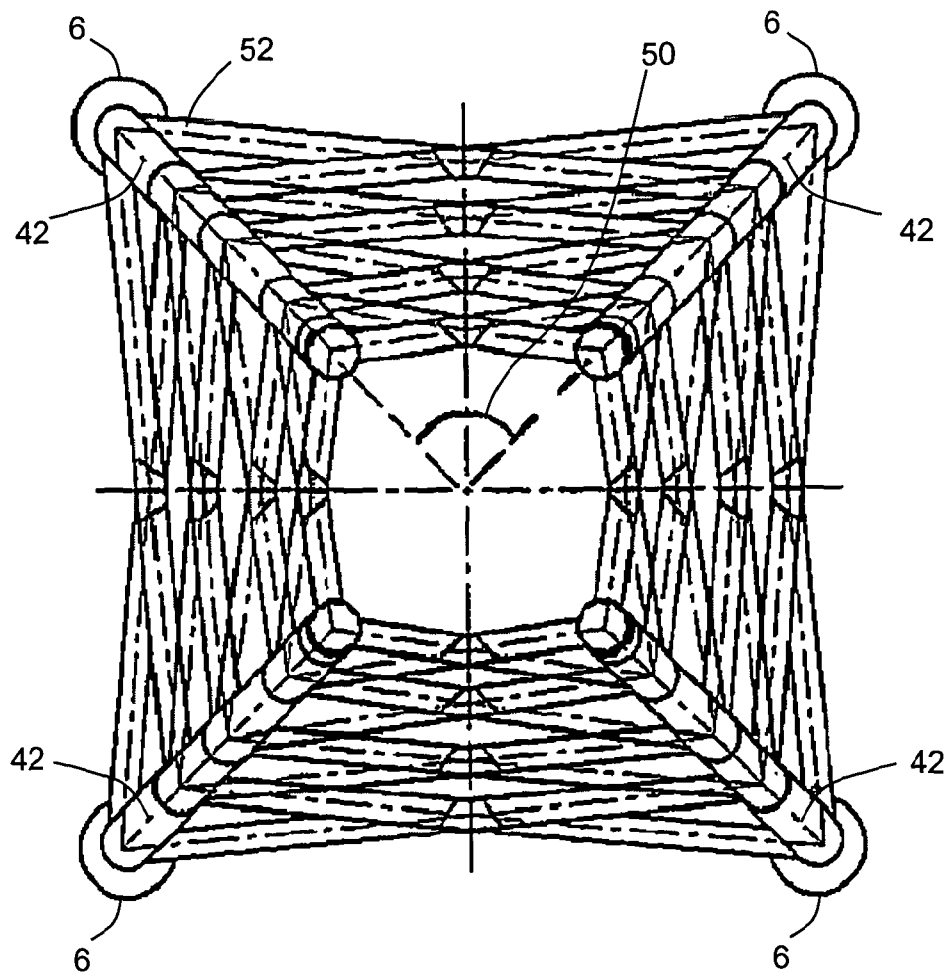


FIGURE 7