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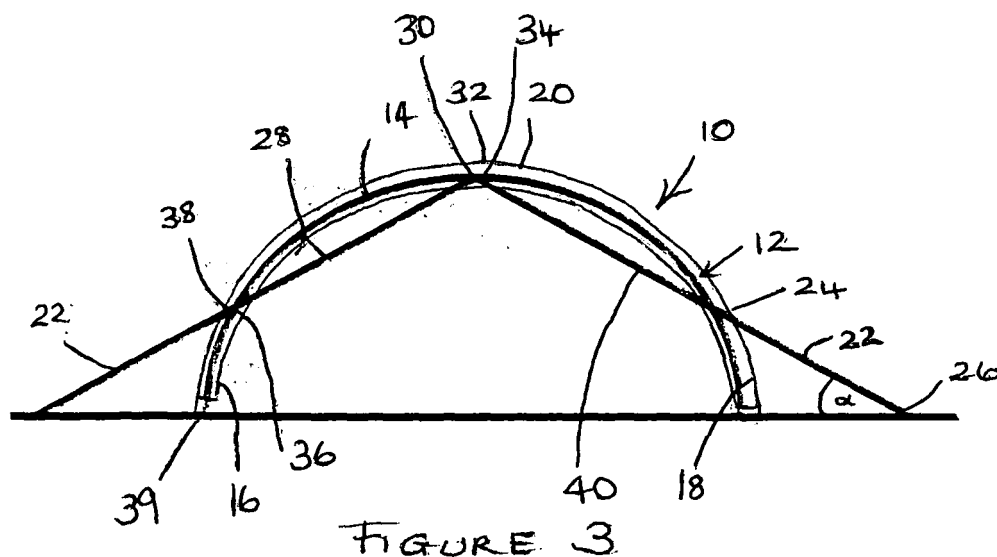
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(54) **Improvements in or relating to tents**

(57) A tent (10) is described which includes a tension bracing system (12) for increasing the stability of a tent which comprises a flysheet (20), one or more arched poles (14) and guy lines (22). At least one guy line (22) is located on the flysheet (20) at a connecting point (24) adjacent to an arched pole (14) and between a midpoint (34) and an end (39) of the arched pole (14). A tensioning member (28) is located such that a first end (30) is ar-

anged for connection at the midpoint (34) of the arched pole (14) and a second end (36) is arranged at the connecting point (38). In this way, a line of tension (40) is created between the midpoint (34) and a pegged out position (26) of the guy line (22) through the connecting point (24, 38). A symmetrical arrangement of a pair of tensioning members (28) at an arched pole (14) is described.



Description

[0001] The present invention relates to tents and in particular, though not exclusively, to an improved tension bracing system for use on tents having an arched pole in their construction.

[0002] There are typically two types of tents which employ arched poles, these being tunnel and dome-shaped tents. The shapes are created by arranging lengths of high tensile aluminium alloy, or fibre glass, poles, which can be spring linked or elasticated, together to form arches. The arches are then fed through sleeves of the flysheet to provide the tunnel or dome shape. In order to stabilise these arrangements a large number of poles are used and/or criss-crossed to create complex geodesic shapes. While these tents are stable in strong winds they have the disadvantages of being heavy to carry, expensive and are typically more difficult to pitch.

[0003] GB 2 237 827 discloses a tension bracing system for providing stability to tents of this type having arched poles. This invention discloses an arrangement whereby a pair of tensioning members are located from a midpoint on the arch to each end of the poles, as illustrated in Figure 1. Such an arrangement has been found to resist distortion, due to wind and weather, of the arched tent pole to which it is attached. Embodiments are described where the tensioning members are fabric straps which are of adjustable lengths to prevent over-tensioning and alternatively, the members are poles located in a tensioning membrane.

[0004] While this arrangement provides improved stability over arched poles alone, disadvantages exist as the poles/straps obstruct the clearance through the arch, limiting the use of the tension brace system at places where the arch forms an entrance or passageway through the tent. This would be particularly relevant to tunnel designs. Additionally, this brace system requires the location of tent pegs at or adjacent to the ends of the poles to ensure a fixed end point for the bracing system. This requires additional pegging over standard tent designs.

[0005] It is an object of at least one embodiment of the present invention to provide an improved tension brace system for use in a tent including one or more arched poles which obviates or mitigates some of the disadvantages of the prior art tension bracing system.

[0006] According to a first aspect of the present invention there is provided a tent, the tent comprising a flysheet; one or more arched poles, wherein at least one pole is located relative to the flysheet to provide support thereto; one or more guy lines, wherein at least one guy line is located on the flysheet at a connecting point adjacent to the said arched pole and between a midpoint and an end of the arched pole; and one or more tensioning members, wherein at least one tensioning member has a first end arranged for connection at the midpoint of the said arched pole and a second end arranged at the connecting point; such that a line of tension is created

between the midpoint and a pegged out position of the guy line through the connecting point.

[0007] In this way the tensioning members are kept higher up the arched poles and thus do not obstruct passage through the arch; pegs are not required at the ends of the arched poles and the structure has increased stability due to the increased tension applied in the horizontal direction compared to the prior art bracing system.

[0008] Preferably a pair of tensioning members are arranged symmetrically in the tent with respect to the arched pole. This provides improved stability and prevents the pole from distorting, due to wind and weather, for example.

[0009] Preferably each pole is located in at least a portion of a sleeve provided on the flysheet. In this way the position of each pole is fixed relative to the flysheet and the guy lines.

[0010] Preferably the tent includes means for attachment of the tensioning member to the flysheet at each end of the member. Alternatively, the tent includes means for attachment of tensioning members to the arched pole at each end of the member. Obviously combinations may also be sought. Advantageously the means for attachment at the second end is located on the opposite side of the flysheet from the guy line but at substantially the same point.

[0011] The means for attachment may comprise fillets of flysheet which include a releasable attachment. In this way the members may be removable to allow for attachment to the tent once the tent is pitched.

[0012] Preferably the tensioning members are strips of fabric or cord. The strips of fabric or cord may be adjustable in length so that the tension over the member can be varied in use. Alternatively the members may be poles. In this arrangement the means for attachment may be pockets located on the flysheet into which the poles locate.

[0013] Preferably, the connecting point is arranged such that, in use, the line of tension makes an intersect angle of around 45 degrees with the ground. In this way, horizontal and vertical loading are balanced. It will be appreciated that for different tent designs the intersect angle may be bigger or smaller. Typically, the intersect angle may lie in the range 30 to 60 degrees. The angle will be directly proportional to the height to width measurements of the tent.

[0014] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying figures of which:

Figures 1 (a) illustrates a prior art tent based on an arrangement of arched poles;

Figure 2 illustrates a prior art tent including tension bracing system; and

Figure 3 illustrates a tent according to an embodiment of the present invention.

[0015] Reference is initially made to Figure 1 which illustrates a known tent design commonly referred to as a tunnel design. The tent A comprises a series of arched poles B used to support a flysheet C which is pegged out using guy lines D. Each pole B is typically formed from a series interconnected high tensile aluminium alloy, or fibre glass, rods which flex sufficiently to form the arch. The poles B are held in place by being arranged through sleeves in the flysheet C at the required locations.

[0016] Now referring to Figure 2 there is illustrated a prior art tension brace system E for use in a tent such as that illustrated in Figure 1, according to the prior art. Figure 2 is a cross-section through the tent A at the location of an arched pole B including the tension brace system E. Tensioning members in the form of two straps F are arranged such that they lie between the apex G of the arched pole B and each end H of the arched pole B. Pegs are located at the ends H to prevent the ends from lifting as tension is applied to the straps F. Guy lines D are used to tie the flysheet C to the ground.

[0017] Reference is now made to Figure 3 of the drawings which illustrates a tent, generally indicated by reference numeral 10, including a tension brace system 12 according to an embodiment of the present invention. Arched pole 14 is held in the classic semi-circular arrangement by location in sleeves 16 arranged on the inner surface 18 of the flysheet 20. Guy lines 22 are attached to the flysheet 20 at connection points 24 and are held taught as they are pegged out to the ground at peg out point 26.

[0018] Tension bracing system 12 comprises two straps 28. Each strap 28 has a first end 30 which is attached at the apex 32 of the tent 10, preferably at the mid point 34 of the pole 14. A second end 36 of the strap 28 is attached to the flysheet 20 at an attachment point 38.

[0019] Attachment point 38 is away from the end 39 of the pole 14 being arranged at or adjacent to the connection point 24. Strap 28 is a fabric strip which includes a tensioning portion as is known in the art which allows the length of the strap to be adjusted. By shortening the length of strap 28 tension is applied between the mid point 34 and the attachment point 38. The straps 28 may be releasably attached to the tent fabric at points 32 and 38. This may be by clips as are known in the art. In this way a user can select whether the tension bracing system is required.

[0020] It is noted that the connection point 24 of the guy line 22 is located on one side of the flysheet 20 directly opposite the attachment point 38 where the tension strap 28 connects. As shown in the Figure, this provides a continuous line 40 from the apex 32 where the tension strap 28 is attached, to the peg out point 26 at the end of the guy line 22. Line 40 travels through the points 24 and 38 also. As tension is applied to the strap 28 and to the guy line 22, the line 40 provides a line of tension across the tent 10.

[0021] In considering this line 40 to the prior art it is noted that the tension strap F is shorter than the line 40.

Thus for the present invention load is spread over a greater horizontal distance over the ground, between peg points 26, providing more stability to a same size tent. It is also found that by bracing the tent from a point between the midpoint 34 and the end 39 the risk of overtensioning the pole 14 is avoided. Additionally there is now no need to peg the tent at the end 39 of each pole 14 as is required in the prior art tent A.

[0022] Line 40 intersects the ground at peg out point 26, making an angle α with the ground. This angle, α , is typically between 30 and 60 degrees though it will be obviously that it can be selected based on the selected location for the connection point 24 and attachment point 38. Typically the location is selected approximately half way between the apex 32 and the end 39 of the pole. Location at such a point provides sufficient 'pull' on the pole to brace it so that the pole maintains the required semi-circular arrangement, while providing sufficient horizontal spread between opposing peg out positions 26 to stabilise the tent.

[0023] The principal advantage of the present invention is that it provides a tent having improved stability over prior art tents of similar construction. A further advantage of the present invention is that it provides a tent wherein access under an arched pole is not as compromised as the prior art tent including a tension brace system. A yet further advantage of the present invention is that it provides a tent including a tension brace system which does not require additional pegs at or adjacent to the ends of the arched poles.

[0024] Modifications may be made to the invention described hereinbefore without departing from the scope thereof. For example, while tension straps have been described for the tensioning members, these may be of a more rigid construction such as poles. In deed, in the present invention poles may also be used for the guy lines. Additionally while the connection point 24 and attachment point 38 are shown at the same location, they may be adjacent to provide easier construction of the required attachments to the flysheet. Further, in the event that insufficient guy line is available to peg out the tent to provide a perfect tension line 40, angle α can be increased. This will result in there being an angle of less than 180 degrees between the strap and the guy line at the connection/attachment point, but a line of tension will still exist as a component of the tension on the guy line will lie on the same line as that of the strap.

Claims

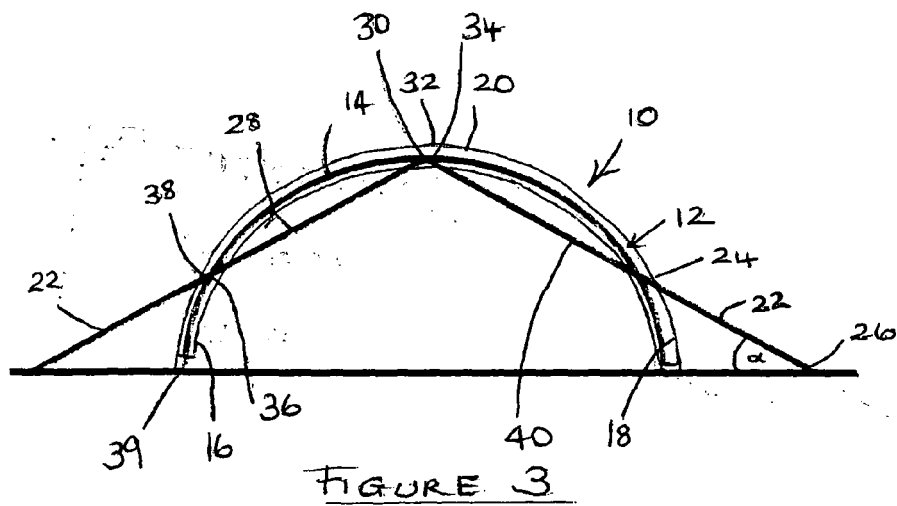
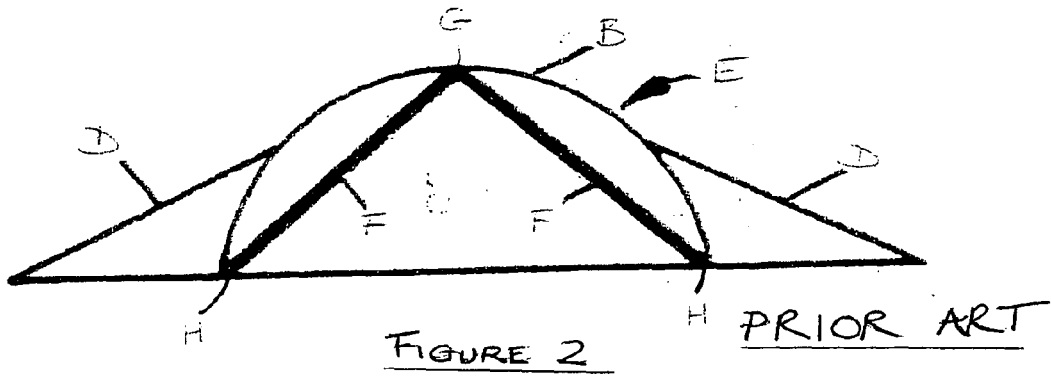
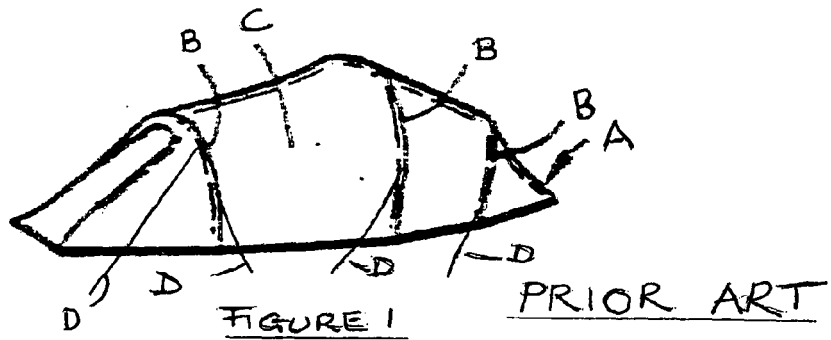
1. A tent (10), the tent comprising a flysheet (20); one or more arched poles (14), wherein at least one pole is located relative to the flysheet (20) to provide support thereto; one or more guy lines (22), wherein at least one guy line (22) is located on the flysheet (20) at a connecting point (24) adjacent to the said arched pole (14) and between a midpoint (34) and an end

of the arched pole (39); and one or more tensioning members (28), wherein at least one tensioning member (28) has a first end (30) arranged for connection at the midpoint (34) of the said arched pole and a second end (36) arranged at the connecting point (38); such that a line of tension (40) is created between the midpoint (34) and a pegged out position (26) of the guy line (22) through the connecting point (24, 38).

2. A tent (10) as claimed in claim 1 wherein a pair of tensioning members (28) are arranged symmetrically in the tent with respect to the arched pole (14). 10
3. A tent (10) as claimed in claim 1 or claim 2 wherein the tent includes means for attachment of the tensioning member (28) to the flysheet (20) at each end of the member (28). 15
4. A tent (10) as claimed in claim 1 or claim 2 wherein the tent includes means for attachment of tensioning members (28) to the arched pole (14) at each end of the member (28). 20
5. A tent (10) as claimed in claim 3 or claim 4 wherein the means for attachment at the second end (36) is located on the opposite side of the flysheet (20) from the guy line (22) but at substantially the same point (24, 38). 25
6. A tent (10) as claimed in any one of claims 3 to 5 wherein the means for attachment comprise fillets of flysheet (20) which include a releasable attachment. 30
7. A tent (10) as claimed in any preceding claim wherein the connecting point (24, 38) is arranged such that, in use, the line of tension (40) makes an intersect angle (α) of around 45 degrees with the ground. 35
8. A tent (10) as claimed in any preceding claim wherein the connecting point (24, 38) is arranged such that, in use, the line of tension (40) makes an intersect angle (α) in the range 30 to 60 degrees with the ground. 40

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EUROPEAN SEARCH REPORT

Application Number
EP 06 25 5021

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
D,A	GB 2 237 827 A (TATE AARN) 15 May 1991 (1991-05-15) * the whole document *	1-9	INV. E04H15/36 E04H15/40
A	DE 22 05 770 A1 (LOSBERGER PLAN) 9 August 1973 (1973-08-09) * figures 6,8 *	1,2,4,5, 7,8	
			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 March 2007	Examiner Topcuoglu, Sadik Cem
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 06 25 5021

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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27-03-2007

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REFERENCES CITED IN THE DESCRIPTION

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