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- (54) **SELF SUPPORTING TENSILE TENT**
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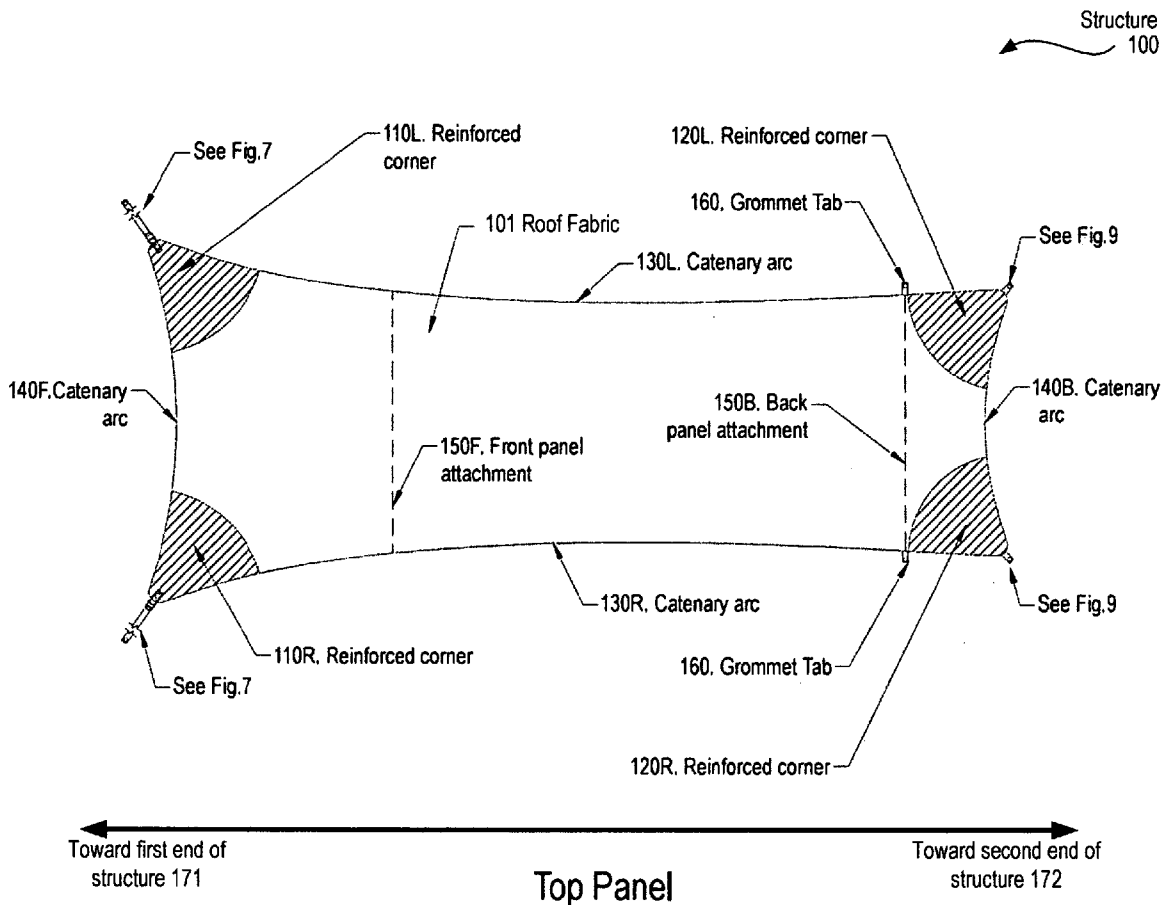
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(57) **ABSTRACT**

Disclosed herein is a self supporting tensile tent structure and methods for use of such a structure. According to one embodiment, structure includes six component panels positioned above ground surface: a roof, a bathtub bottom positioned below the roof component, a pair of side panels and front and back panels all vertically oriented and attached to the roof by a top edge and further attached to the bathtub bottom by a bottom edge; a pair of reinforced corners at the end of the tensile tent anchors structure to the ground surface; a supporting member to create loft for the tensile tent toward the front of the structure by elevating the roof component above the ground surface; a second pair of reinforced corners anchors the front of the tensile tent to the ground surface and induces tension to the roof when erected. Other related embodiments are described.



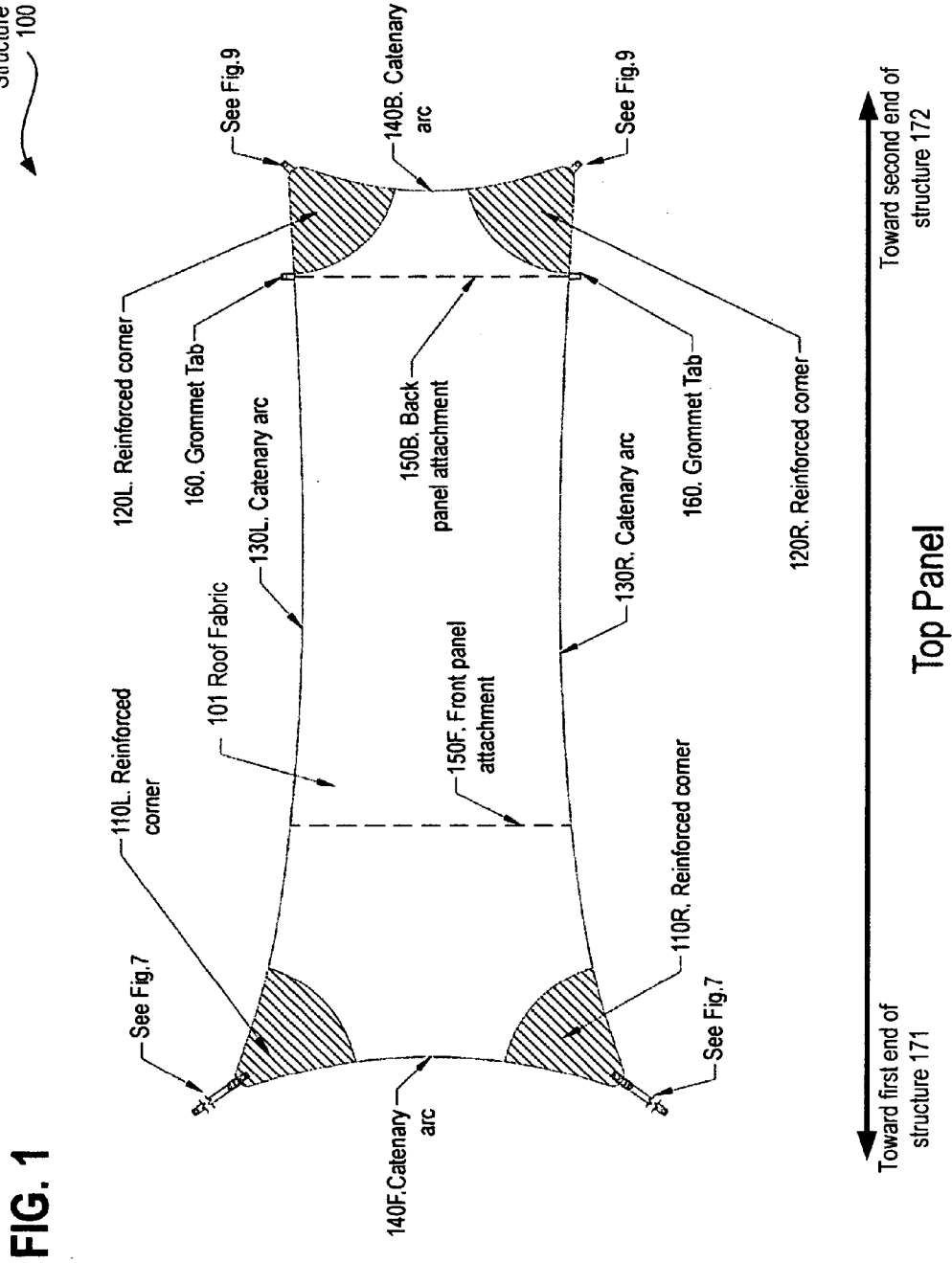
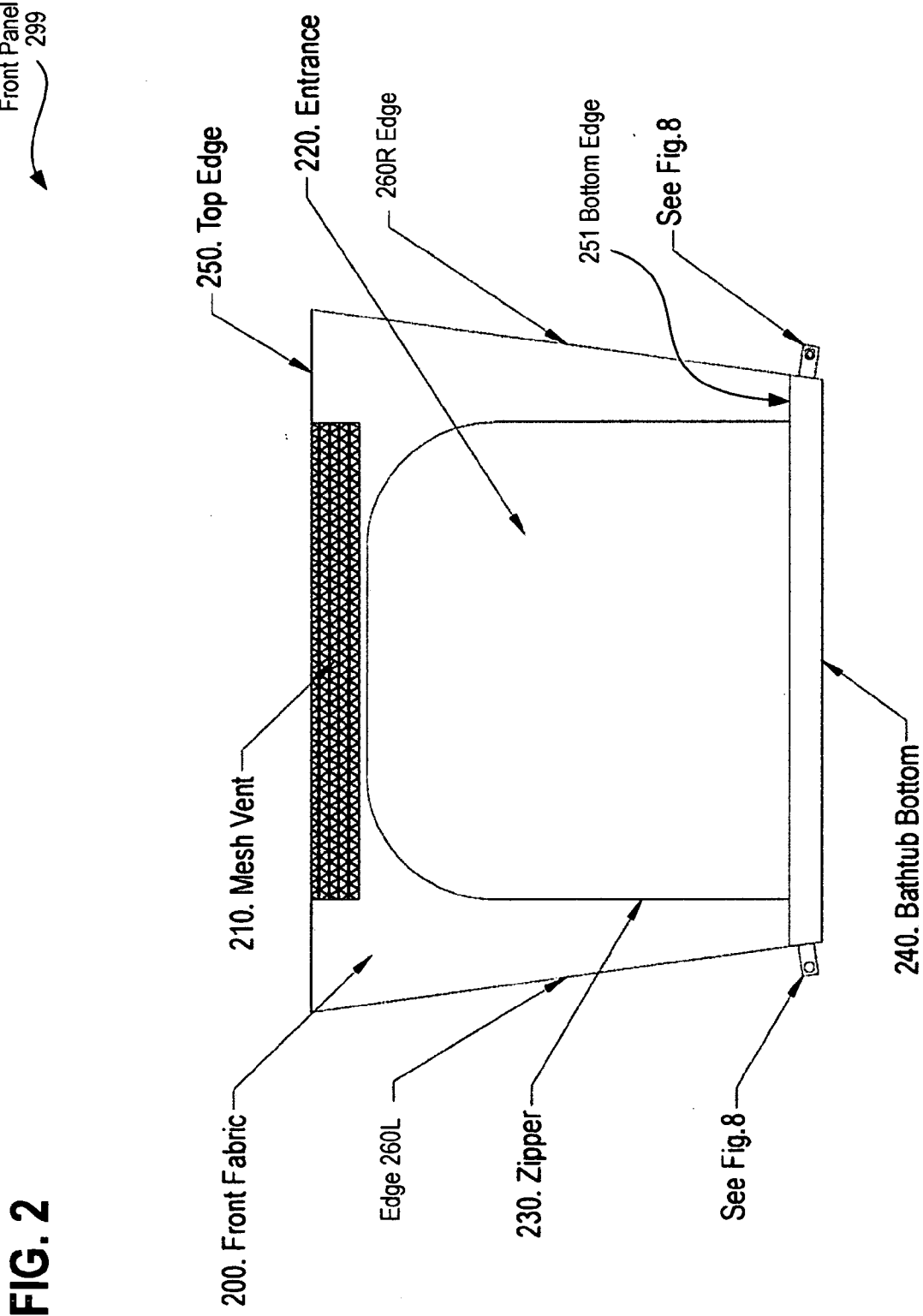


FIG. 1



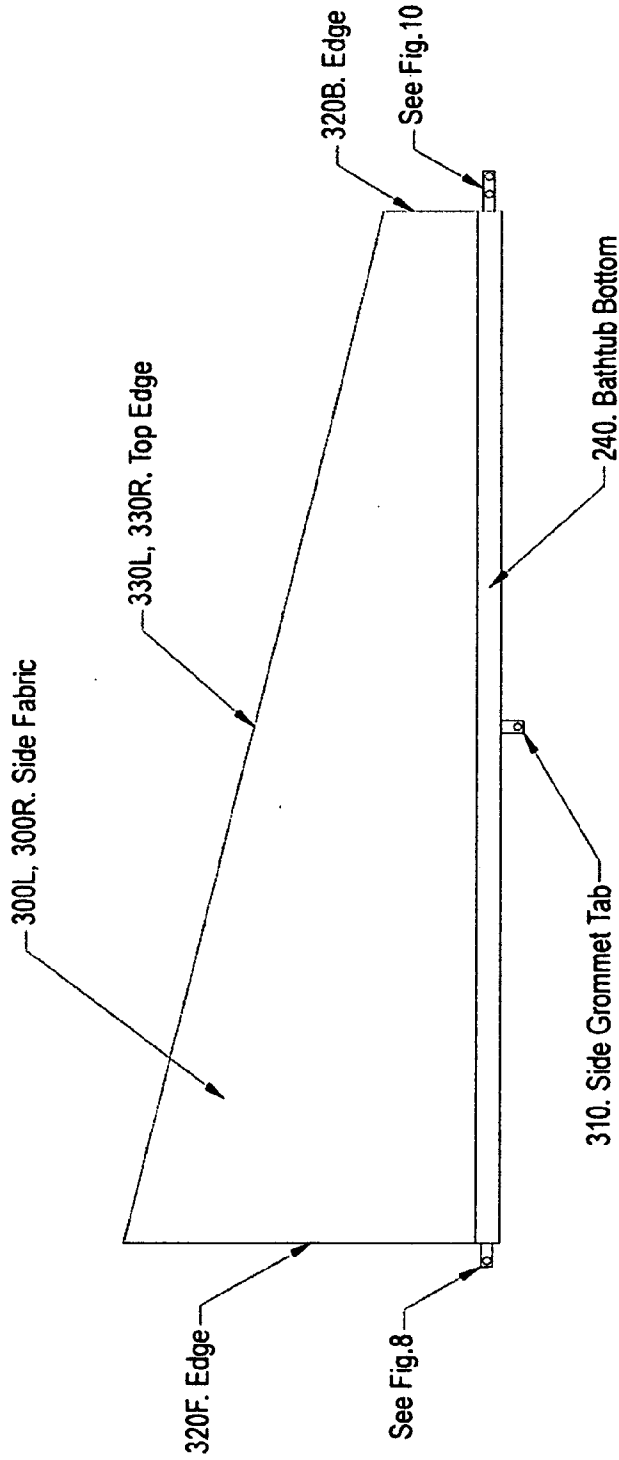
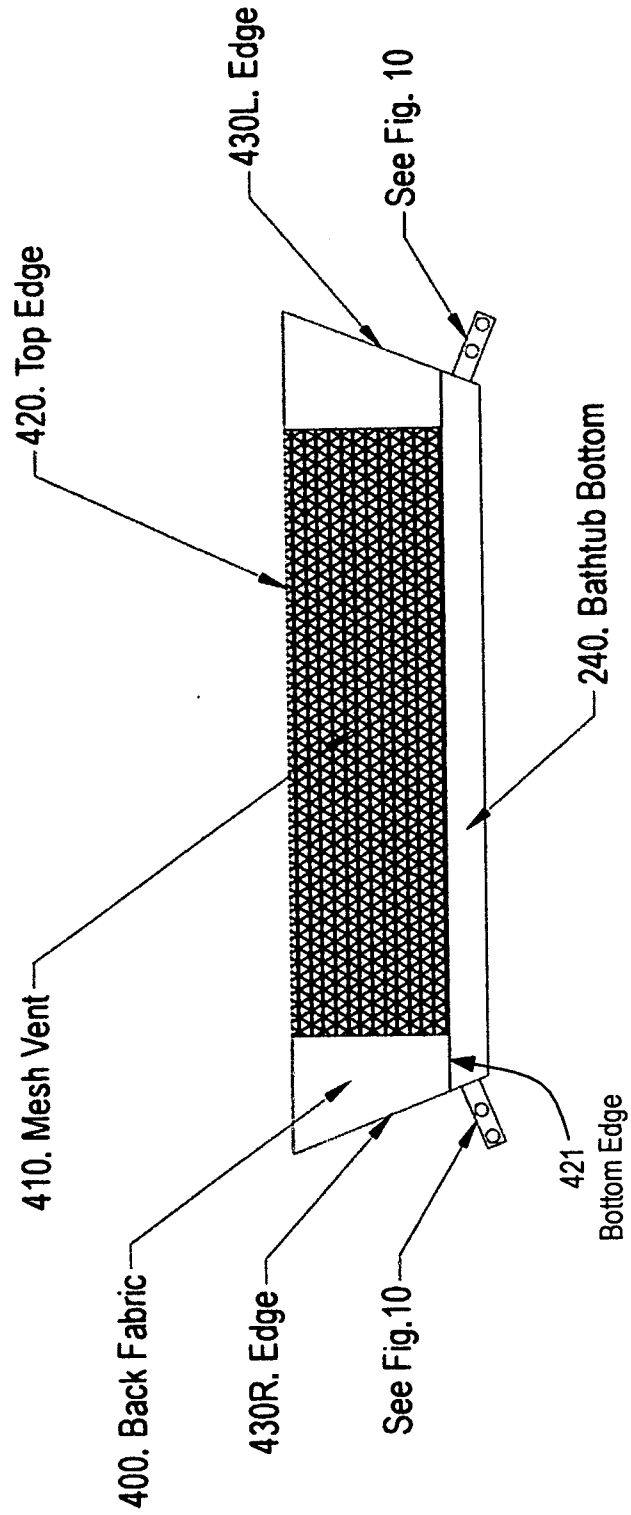


Fig.3 Side Panels (Left & Right)

Back Panel
499

FIG. 4



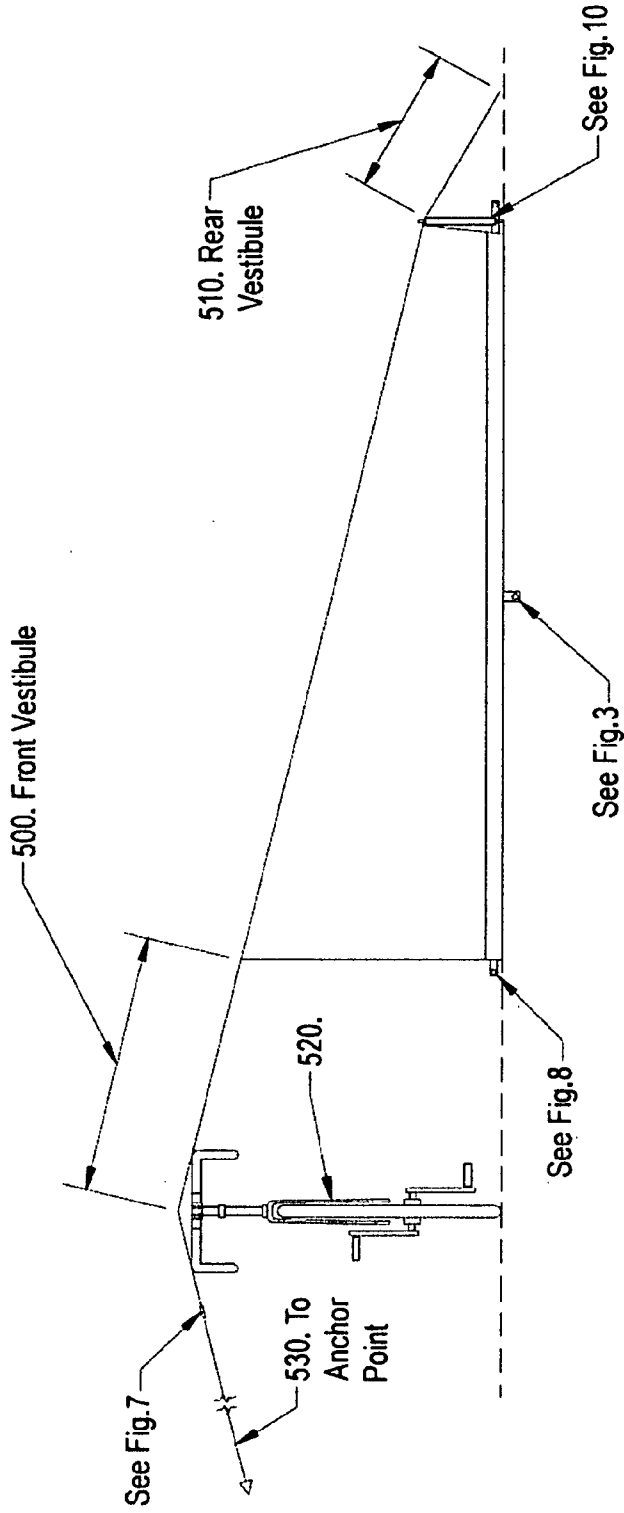


Fig. 5 Tent Pitched Over Bicycle

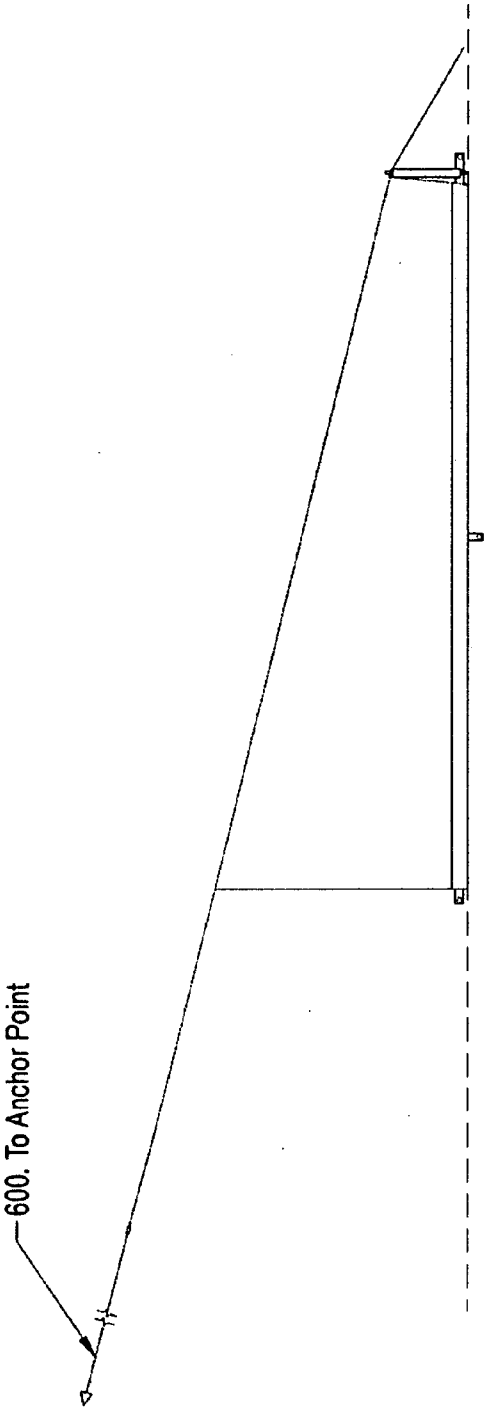


Fig.6 Alternate Pitching Method

Top Front Corner Detail
799

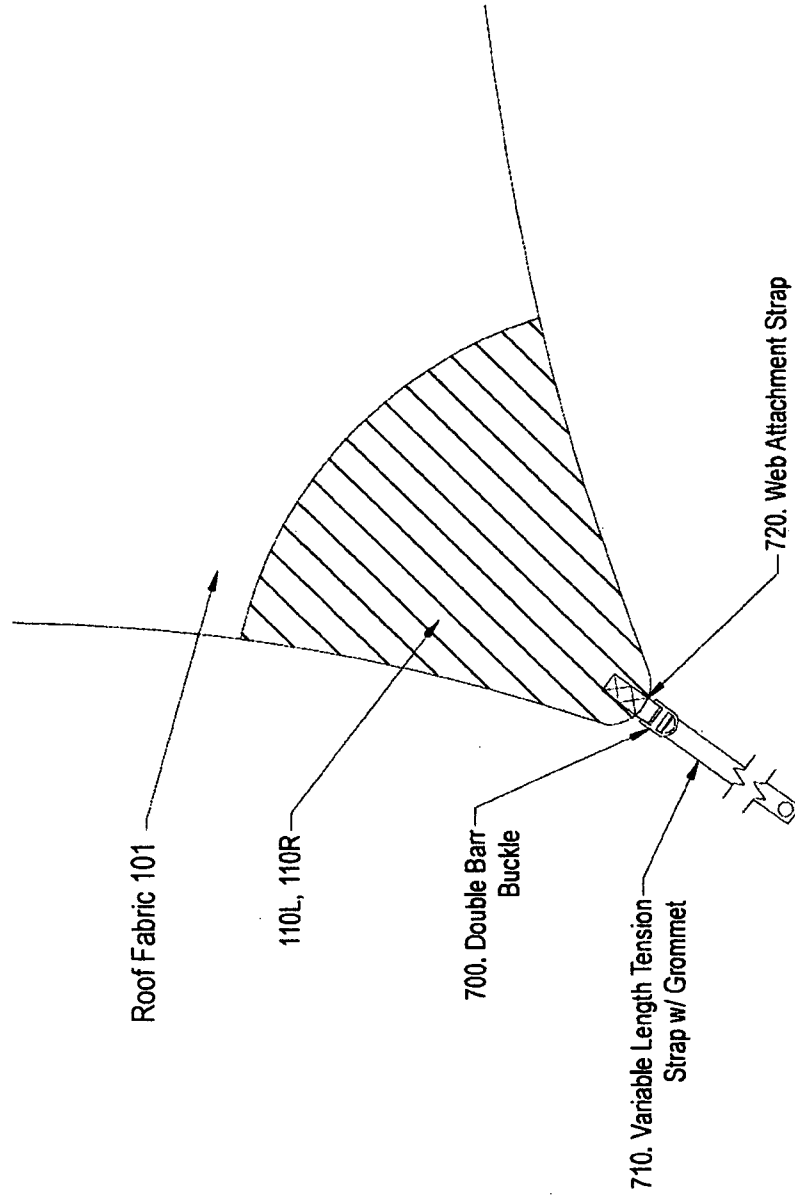


FIG. 7

Bottom Front Corner Detail
899

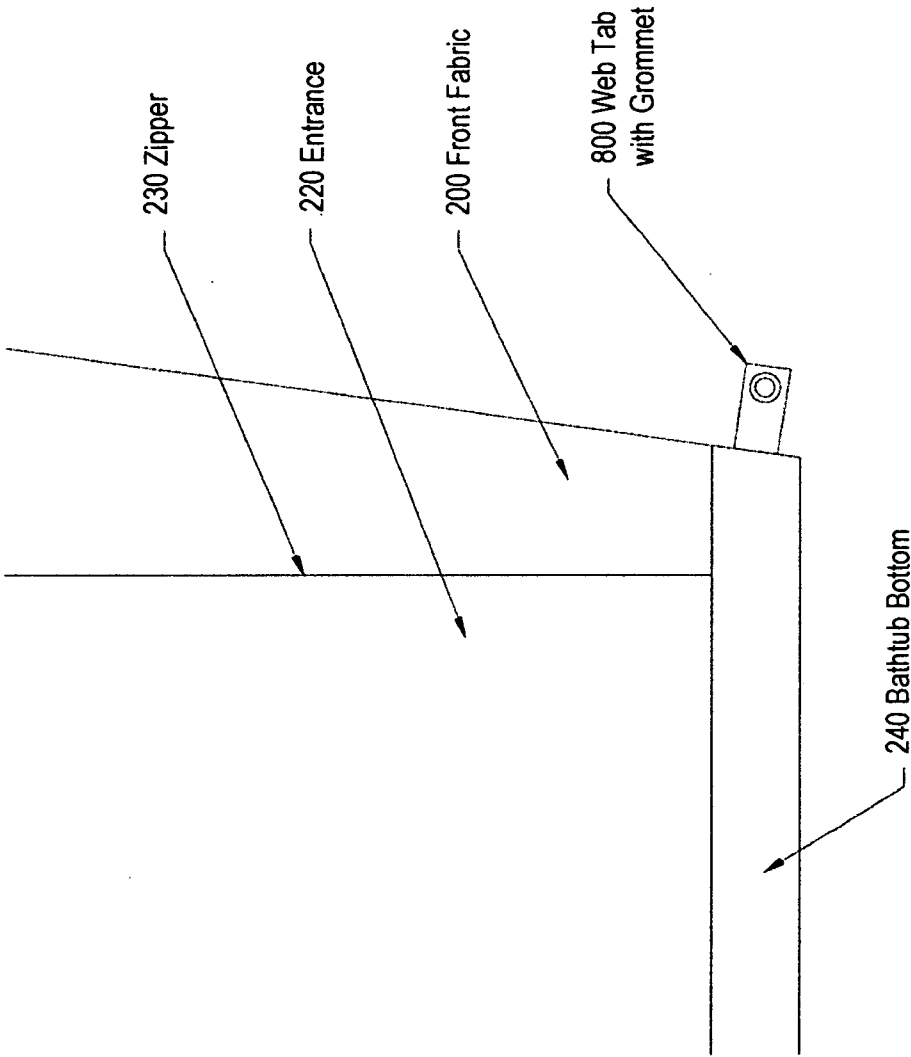


FIG. 8

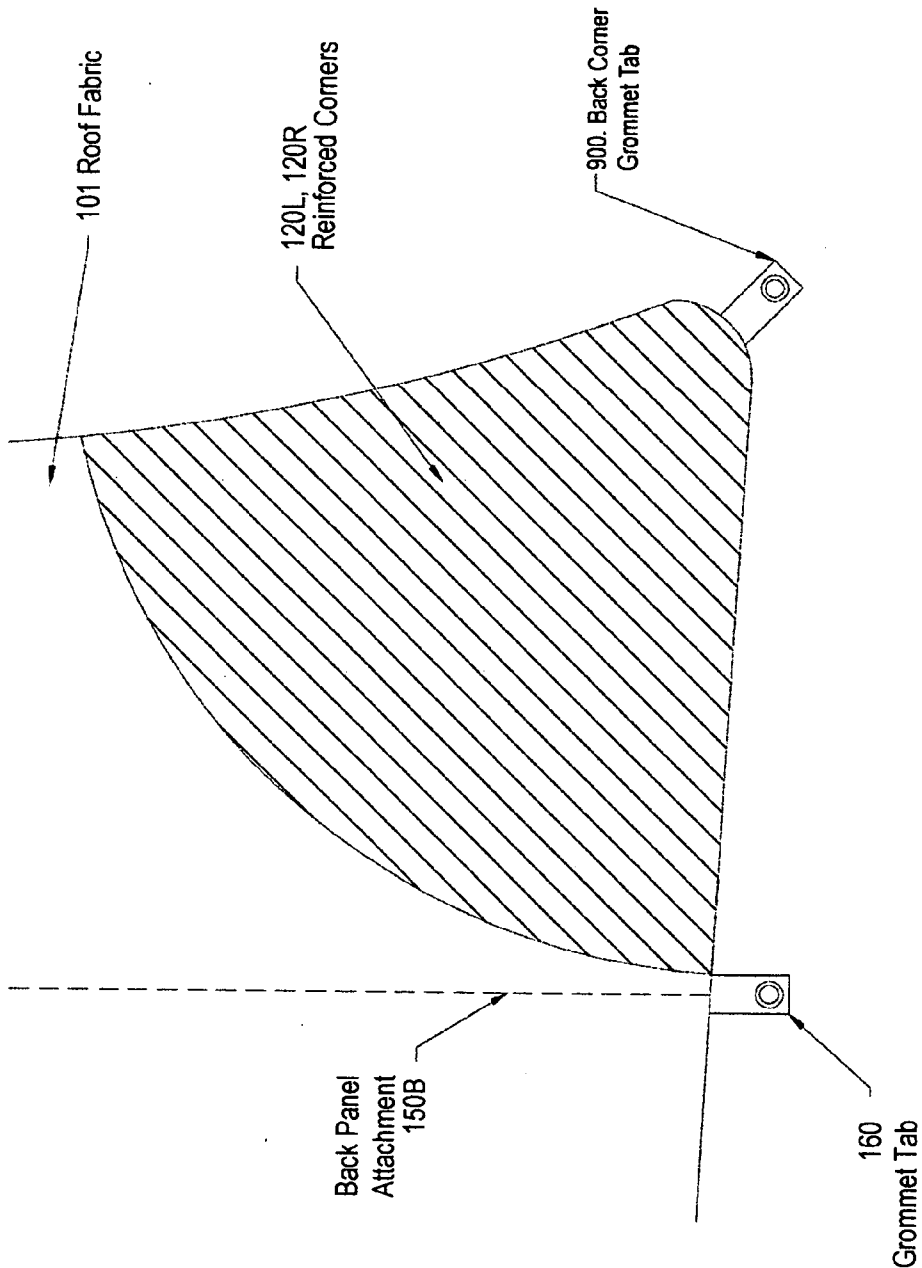


Fig.9 Top Back Corner Detail

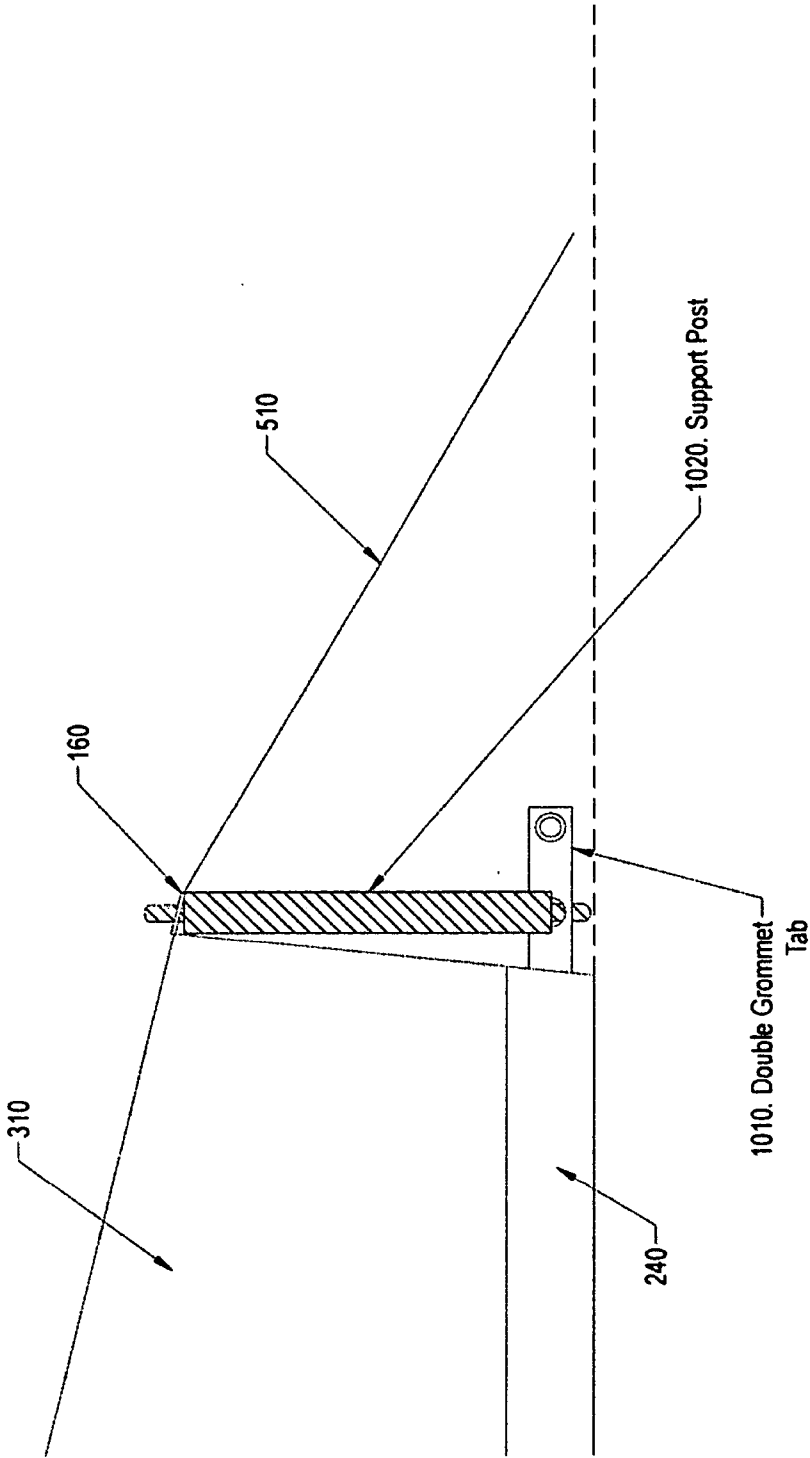


Fig.10 Bottom Back Corner Detail

SELF SUPPORTING TENSILE TENT

PRIORITY

[0001] This U.S. utility patent application is related to and claims priority the U.S. provisional application filed on Jul. 6, 2012 entitled "Cycle-Leanto" having application number 61/690,837, the entire contents of which are incorporated by reference herein.

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TECHNICAL FIELD

[0003] Embodiments of the invention relate to the field of recreational equipment and more particularly to a self supporting tensile tent structure is as described herein.

BACKGROUND

[0004] The subject matter discussed in the background section should not be assumed to be prior art merely as a result of its mention in the background section. Similarly, a problem mentioned in the background section or associated with the subject matter of the background section should not be assumed to have been previously recognized in the prior art. The subject matter in the background section merely represents different approaches, which in and of themselves may also correspond to embodiments of the claimed inventions.

[0005] Tents exist to provide a protected area for the occupant to escape the exterior elements during times of layover or rest.

[0006] Unfortunately, tents presently available today require structural sub-frame elements (e.g., such as tent poles) to be carried with the tent so that the tent is supported when erected for use. Such required structural sub-frame elements add significant bulk and heft to a tent that is packed up for transport, or otherwise not in use, and therefore consumes an already limited amount of space otherwise available for packing or carrying supplies necessary for a journey, camping trip, etc.

[0007] Therefore, a self-supporting tensile tent structure would represent a significant contribution to the state of the art.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The present invention is illustrated by way of example, and not by way of limitation, and can be more fully understood with reference to the following detailed description when considered in connection with the figures in which:

[0009] FIG. 1 shows the top panel details of an exemplary structure;

[0010] FIG. 2 shows the front panel details of an exemplary structure;

[0011] FIG. 3 shows the side panels of an exemplary structure;

[0012] FIG. 4 shows the back panel details of an exemplary structure;

[0013] FIG. 5 shows an exemplary structure supported by a bicycle or other supporting member in accordance with one embodiment;

[0014] FIG. 6 shows an exemplary structure without a bicycle in accordance with the disclosed embodiments;

[0015] FIG. 7 shows top front corner detail of the top panel of an exemplary structure;

[0016] FIG. 8 shows bottom front corner detail of the top panel of an exemplary structure;

[0017] FIG. 9 shows back corner details of the top panel of an exemplary structure; and

[0018] FIG. 10 shows bottom back corner detail of the top panel of an exemplary structure.

DETAILED DESCRIPTION

[0019] Described herein is a personal tensile tent system and structures usable with professional cycle/motorcycle touring equipment. According to the several embodiments, such system and structures provide at least the following advantages over conventional solutions: accommodation of user/s and gear, the adaptability to multiple users' mode of transport, the reduction of structure maintenance, ease of set up as a result of minimum frame members and the increased security of one's travel device.

[0020] Conventional tents utilized for cycle/motorcycle touring are designed to be small and packable. For example, consider the EUREKA Solitaire Tent or the COLEMAN Hooligan 2, both of which are packable tents under 6 pounds which accommodate one or two persons.

[0021] The utilization of a tensile design greatly increases the size of the sleeping compartment. The resulting size increases ones comfort while decreasing the size to weight ratio.

[0022] A tensile structure is a construction of elements carrying only tension and no compression or bending. The term tensile should not be confused with tensegrity, which is a structural form with both tension and compression elements. Tensile structures are a common type of thin-shell structures. A tensile membrane structure is commonly used as a roof, as they can economically and attractively span large distances.

[0023] Use of a tensile structure provides not only sanctuary for the user but security for the mode of transport, be it a bicycle, motorcycle, etc. Embodiments described herein may incorporate a bicycle or a motorcycle in its set up as well as other ridged and/or stationary structures or objects available as will be described in additional detail below. By design, the rider does not have to worry about the security of the bicycle or motorcycle as the rider sleeps as it is both in close proximity to the rider's tent and also utilized as a supporting element for the tensile tent structure.

[0024] According to one embodiment, the tensile tent structure is packable and does not exceed 160 cubic inches of space when packed. The tensile tent structure sets up without requiring any frame elements to be packed with, or carried with the packed tent.

[0025] According to one embodiment, the tensile tent structure is designed for the motorcyclist, cyclist or backpacker looking for a three season tent with minimal setup and weight. An additional benefit to motorcyclist and cyclist users is that the tent provides security and weather protection of their particular mode of transportation when the tent is deployed. Conventional three season tents are designed to accommodate recreational users of cycles/motorcycles in

weather conditions that generally correspond to the spring, summer, and fall seasons. This seasonal usage corresponds to the traditional usage period of a cycle/motorcycle.

[0026] One active niche market for tents are single purpose tents thus identifying with a consumer base that has a particular interest.

[0027] With the absence of a frame the tensile tent structure described requires fewer parts to assemble. With the decrease in parts the tensile tent structure described sets up faster than conventionally available tents. Moreover, with the absence of frame the tensile tent structure described is lighter than conventional tents.

[0028] FIG. 1 shows the top panel details of an exemplary structure 100. Element 171 depicts the direction toward the first end of the structure on the lateral left hand side and element 172 depicts the direction toward the second end of the structure on the lateral right hand side.

[0029] Roof fabric 101 provides the roof of the sleeping compartment of the tensile tent structure 100. According to one embodiment it is a water-repellent, air tight, fire retardant nylon fabric, without seams.

[0030] Reinforced corners 110L and 110R provide the top front attachments and tensioning points for the structure 100. These points are reinforced with the addition of a secondary fabric to distribute the loads and forces present when the tent is under tension.

[0031] Reinforced corners 120L and 120R are the top back attachments and tensioning points for the structure 100. These points are reinforced with the addition of a secondary fabric to distribute the loads and forces present when the tent structure 100 is under tension.

[0032] Catenary arcs 130L and 130R are the catenaries on the sides of the tent top. A catenary is a curve theoretically formed by a perfectly flexible, uniformly dense, inextensible "cable" suspended from each of two end points. In fabric structures experience, this shape is probably not ever truly developed, but is used to describe the shape developed at the boundary of a uniformly stressed fabric structure attached to a cable which is restrained only at its end points.

[0033] The use of catenaries increases the tension of the fabric. This increased tension reduces fabric flapping and wind disturbance. In doing so, wind abuse is reduced on the fabric, thus increasing the fabric's longevity and further increasing the integrity of the tent structure 100.

[0034] According to the embodiment shown, the catenary arcs 130L and 130R are mirror to one another and run parallel to one another. The catenary arcs 130L and 130R further work in conjunction with one another, thus contributing to the tensile system of the structure 100.

[0035] Front and back catenaries 140F and 140B form the catenaries on the front and back of the tent structure's 100 top. According to the embodiment shown, these arcs are mirror to one another and run parallel to one another. These arcs work in conjunction with one another contributing to the tensile system of the tent structure 100.

[0036] The combination 130L and 130R with 140F and 140B are pairs of catenary arcs in parallel orientation to one another. This pairing and tensioning allows this design to work without additional frame supports other structures must rely on.

[0037] Front panel attachment 150F forms the point at which the front panel (element 299 of FIG. 2) attaches to the roof fabric 101 via top edge 250.

[0038] Back panel attachment 150B forms the point at which the back panel (see element 420 of FIG. 3) attaches to the roof fabric 101.

[0039] Grommet tab 160 forms an attachment point for anchoring the structure 100 to the ground. According to one embodiment, grommet tab 160 is constructed of a 1" wide web that protrudes from roof fabric 101 by 1 inch with the opposite end of grommet tab 160 being sewn to the underside of roof fabric 101. According to one embodiment, grommet tab 160 is a brass grommet having an opening of one-quarter inch (0.25").

[0040] FIG. 2 shows the front panel 299 details of an exemplary structure.

[0041] Front fabric 200 forms the entry (e.g., the front door) and front panel 299 of the tent structure 100. According to one embodiment, front fabric 200 is a water-repellent, air tight, fire retardant nylon fabric.

[0042] Mesh vent 210 provides for air circulation through the tent structure 100. According to one embodiment mesh vent 210 is a coated mesh fabric. A mesh fabric is a woven, knit or knotted material of open texture with evenly spaced holes and is top coated with a PVC or other coating.

[0043] Element 220 forms the entrance into the tent structure 100. Element 220 may be constructed of the same fabric that roof fabric 101 and front fabric 200 are made from. Element 220 is achieved with the presence of zipper 230. The entrance flap at element 220 of the tent structure 100 becomes a waterproof mat under the overhang area when zipper 230 is unzipped. According to one embodiment, the mat formed by element 220 provides approximately five square feet of mat space.

[0044] According to one embodiment, zipper 230 is a chain zipper with a double pull. A double pull zipper provides access and operation of the zipper 230 from either inside or outside of the tent structure 100.

[0045] Bathtub bottom 240 forms the bottom portion of the tent structure 100. Bathtub bottom 240 additionally forms bottom is the sleeping surface of the tent structure 100. According to one embodiment, the sleeping area is approximately 36 feet wide by 7 feet long. According to one embodiment, bathtub bottom 240 is constructed of a water proof vinyl fabric, Polyethylene, polypropylene or a PVC coated fabric. Floor pleats in the corners of the tent structure 100 form a two inch lip, thus forming the shape of the bathtub bottom 240. The term "bathtub bottom" is the resulting shape when the four sides of a sheet is folded up and pleated in the corners. The top edges of the bathtub bottom 240 are attached to the bottom edges of side fabric 300L and 300R shown at FIG. 3. Conventional tents available today do not provide the combination of a tensile form with a sleeping compartment that is fully enclosed.

[0046] Element 250 forms the top edge of the front panel 299. Top edge 250 attaches to the roof fabric 101 near a first end of the tent structure 101. Element 251 forms the bottom edge of the front panel 299. Bottom edge 251 attaches to the bathtub bottom 240 near the first end of the tent structure 101.

[0047] Elements 260R and 260L form the side edges which attach to side fabric 300R and 300L respectively.

[0048] The front panel 299 is made up of two fabrics; mesh vent 210 and front fabric 200. According to one embodiment, mesh vent 210 is a small 30 inch wide by 2.5 inch tall section centered over the entrance at element 220. The remaining 26.5 inches of height, according to this embodiment, being made up of front fabric 200.

[0049] The front panel 299 attaches to the roof fabric 101. According to one embodiment, front panel 299 is set back 36 inches from catenary arch 140F.

[0050] According to one embodiment, zipper 230 starts at the bottom left, set back three inches in from edge 260L. Zipper 230 then travels up vertically to within one inch of mesh vent 210 and then zipper 230 travels parallel below mesh vent 210 until the zipper 230 is within three inches of edge 260R. Zipper 230 then travels vertically down to the point at which bathtub bottom 240 and front fabric 200 meet, thus causing the zipper 230 to form an inverted "U" shape.

[0051] FIG. 3 shows the side panels 300R and 300L of an exemplary structure.

[0052] Side panels 300L and 300R form the sides of tent structure 100. According to one embodiment, side panels 300R and 300L are a mirrored pair of water repellent, air tight, fire retardant nylon fabric.

[0053] Top edge 330L and 330R form a sloping edge at the top of the side panels 300R and 300L and attaches to the roof fabric 101 between front panel attachment 150F and back panel attachment 150B.

[0054] The bottom straight edge of 300L and 300R attaches bathtub bottom 240.

[0055] Element 310 forms a side grommet tab to anchor the tent structure 100 to the ground. For example, grommet 310 may be utilized when a tent stake is inserted thru the grommet and put in to the ground thus securing the bottom sides of the tent.

[0056] Element 310 may be constructed of one inch wide web that protrudes from bathtub bottom 240 by three inches with the opposite side of side grommet tab 310 being sewn to the underside of bathtub bottom 240. According to one embodiment, element 310 is a brass grommet having an opening of a quarter of an inch (0.25 inches).

[0057] FIG. 4 shows the back panel 499 details of an exemplary structure.

[0058] Back fabric 400 forms the back panel 499 of the tent structure 100. According to one embodiment, back fabric 400 is a water-repellent, air tight, fire retardant nylon fabric.

[0059] Mesh vent 410 forms a vent into the tent structure 100 for the purposes of air ventilation. According to one embodiment mesh vent 410 is formed from a coated mesh fabric that is woven, knitted or knotted, forming a material of open texture with evenly spaced holes and may additionally be top coated with a PVC or other coating.

[0060] Element 420 forms the top edge of the back panel 499 which attaches to the roof fabric 101 near a second end of the tent structure 101. Element 421 forms the bottom edge of the back panel 499. Bottom edge 421 attaches to the bathtub bottom 240 near the second end of the tent structure 101.

[0061] Elements 430R and 430L form the edges of back panel 499. Edges 430R and 430L attach to side fabrics 300R and 300L respectively.

[0062] According to one embodiment, the back panel 499 is a ten inch tall panel made up of two fabrics, mesh vent 410 and back fabric 400. In one embodiment, mesh vent 410 is a small 30 inches wide by 8 inches tall section centered over bathtub bottom 240. The remaining small wedges of fabric at the lateral left and right sides of back fabric 400 are attached to mesh vent 410 forming element 420 at the top edge. According to one embodiment, the back panel 499 attaches to the roof fabric 101 set back 18 inches from catenary arc 140B.

[0063] FIG. 5 shows an exemplary structure supported by a bicycle or other supporting member in accordance with one embodiment.

[0064] Front vestibule 500 forms a covered or protected area outside the entrance at the first end of structure 171 of tent structure 100. According to one embodiment, front vestibule 500 projects 30 inches from the front panel 299 to provide shade as well as a covered area. In such an embodiment, the covered area is 8.25 square feet of covered vestibule space. Front vestibule 500 is unique as it is incorporated as part of the seamless roof fabric element 101.

[0065] Rear vestibule 510 forms a covered outside storage area at the second end of structure 172 of the tent structure 101. According to one embodiment, the covered outside storage area formed by rear vestibule 510 is a small 4.5 square foot covered vestibule which may be utilized, for example, to store gear outside. Rear vestibule 510 is unique as it is incorporated as part of the seamless roof fabric 101.

[0066] Element 520 depicts the supporting member for the tensile tent structure 100, such as a bicycle as shown at FIG. 5. The purpose of the supporting member 520 is to create the tent structure's 100 primary source of loft. Element 520 in this illustration has eliminated specialized poles or frame member elements that are required by conventional tents available to the market place today.

[0067] Users of the disclosed self supporting tensile tent structure 100 will already be using supporting member 520 (e.g., such as a bicycle or motorcycle, etc.) as a means of transport. Such a user can therefore re-purpose the bicycle into a structural element to provide loft to the self supporting tensile tent structure 100.

[0068] While a bicycle is depicted at FIG. 5 as the supporting member 520, any number of objects may be utilized in the same fashion so as to attain the described loft provided by support structure 520. Examples of other suitable objects that can easily be utilized in lieu of the bicycle for supporting member 520 include, but are not limited to: a log, a motorcycle, a trailer, an ATV, a wall, a bench, and so forth.

[0069] Anchor point 530 slopes in a downwards fashion and is attached to the ground. by placing a ground stake or other ground securing members through the grommet in variable length tension strap with grommet 710. One embodiment has support structure 520 leverage under roof fabric 101. The Roof fabric 101 and the variable length tension strap with grommet 710 over the structural member and secured to the ground via variable length tension strap with grommet 710 after pressure is applied to variable length tension strap with grommet 710 via double Barr buckle 700 the bicycle can stand upright without the use of a kick stand. The same downward attachment of 530 can be done with any number of objects. Suitable objects that can easily be inserted into FIG. 5 can be the following but not limited to the following: a log, a bicycle, a motorcycle, a trailer, an ATV, a wall, a bench.

[0070] In another embodiment the supporting member 520 other than the shown bicycle of FIG. 5 the support member 520 can be but not limited to: a log, a motorcycle, a trailer, an ATV, a wall, a bench, and so forth.

[0071] FIG. 6 shows exemplary structure without a bicycle in accordance with the disclosed embodiments.

[0072] Anchor point 600 is the anchor point for structure 100 that slopes in an upward angle. Anchor point 600 of this embodiment has variable length tension strap with grommet 710 attached to reinforced corner 110L and 110R. This embodiment has variable length tension strap with grommet

710 at a height greater than a height of the front panel **299**, sources of height greater than the height of front panel **299** can be but not limited to the following: A vehicle (car, truck, bus, motorcycle, two trees, a fence, a house, a bench).

[0073] The anchor point **600** is completed once the variable length tension strap with grommet **710** is anchored and tensioned. In one embodiment the variable length tension strap with grommet is tied or otherwise secured to an object, the variable length tension strap with grommet **710** does not necessarily have to go to the ground. Once the variable length tension strap with grommet **710** is securely attached pressure is applied to the variable length tension strap with grommet **710**, this is done by pulling on the loose end that is run through the double Barr Buckle **700**.

[0074] In another embodiment the variable length tension strap with grommet **710** attached to reinforced corner **110L** is attached to anchor point **530** while variable length tension strap with grommet **710** attached to reinforced corner **110R** is attached to anchor point **600**.

[0075] FIG. 7 shows top front corner detail **799** of the top panel of an exemplary structure.

[0076] The double Barr buckle **700** adjusts and holds the tension to roof fabric **101** and structure **100**. In this embodiment the double Barr buckle **700** allows for quick release of the tension previously applied for ease of tent disassembly. Double Barr buckle **700** can be constructed of nylon that is sewn to both reinforced corners **110L** and **110R** via web attachment **720**.

[0077] Variable length tension strap with grommet **710** provides the tension to structure **100**.

[0078] Variable length tension strap with grommet **710** may be constructed of one inch wide web with one end being attached to double Barr buckle **700** and the other end having brass grommet having an opening of a quarter of an inch (0.25 inches). The end of the web that has been run through **700** are now pulled on to create the tension for the structure **100** and roof fabric **101**.

[0079] Element **720** forms the web attachment strap. In one embodiment it is an 8 inch by 1 inch wide web strap that is a doubled over segment of web sewn down to the underside of reinforced **110L** and **110R** after having been inserted into the double Barr buckle **700**.

[0080] FIG. 8 Shows bottom front corner detail **899** of the top panel of an exemplary structure.

[0081] Element **800** forms a web tab with grommet to anchor tent structure **100** to the ground. For example, web tab with grommet **800** is sewn into the corner pleat of bathtub bottom **240** and may be utilized when a tent stake is inserted through the grommet and put into the ground thus securing the bottom front corner **899** of the tent. In one embodiment the grommet is a brass grommet that has an opening of one quarter of an inch (0.25 inches).

[0082] FIG. 9 Shows back corner details of the top panel of an exemplary structure.

[0083] Back corner grommet tab **900** may be constructed of one inch wide web that protrudes from reinforced corners **120L** and **120R** by three inches with the opposite side of grommet tab **900** being sewn to the backside of reinforced corners **120L** and **120R**. The back corner grommet tab **900** can be brass having an opening of a quarter of an inch (0.25 inches).

[0084] The purpose of **900** is for attachment to the ground. In one embodiment the grommet in **900** will be utilized when

a tent stake is inserted through the grommet and put in to the ground thus securing the top back corner of the tent.

[0085] FIG. 10 Shows bottom back corner detail of the top panel of an exemplary structure.

[0086] Double grommet tab **1010** holds the support post **1020** and also has a ground anchoring point. In one embodiment the double grommet tab is constructed of 1" wide web that protrudes from the bathtub bottom **240** by 3.5 inches, the other end of the tab is sewn into the corner pleat of the bathtub bottom **240**, the two brass grommets placed 1.25 inches part. The grommets have an opening of one quarter of an inch (0.25 inches).

[0087] In one embodiment the grommet closest toward the second end holds the support post **1020** with the other grommet receiving a stake to anchor double grommet tab **1010** to the ground.

[0088] Support post **1020** is a 10 inch tall aluminum post that is only utilized during alternative embodiments of the structure to increase the interior volume to the sleeping compartment.

[0089] In one embodiment support post **1020** does not have a top or a bottom one end is inserted into grommet tab **160** and the other is inserted into the inner grommet of double grommet tab **1010**.

[0090] The invention had to overcome several issues. The first is the security of one's mode of transportation the bicycle/motorcycle. FIG. 5 shows the integral use of the complete bicycle or support member **520** for the vertical support of the structure while providing additional security for said support member. In one embodiment the bicycles' security is increased due to the fact that any disruption of the bicycle will alert the occupant, and the removal of the cycle will render the tensile tent structure **100** unusable, making tampering with the bicycle virtually impossible. The current design of tours and rallies using bicycles/motorcycles have these devices stored or located in areas away from where the participant is located this increasing ones anxiety over the security of said cycle/motorcycle

[0091] Another issue overcome through practice of the embodiments is the varying heights and sizes of bicycles/motorcycles in use. The front vestibule **500** is the resulting distance between the tensile tents front panel **299** and the placement of the bicycle. In one embodiment the 30 inch length of the front vestibule **500** allows for the tent to accommodate varying structure heights. This ability to accommodate various heights of support structures **520** is a unique characteristic to this embodiment and this invention alone. Stated another way the resulting distance of roof fabric **101** beyond the front panel **299** is not constrained by any additional panels this affecting its angle or height to the ground. Stated further the Variable length tension straps with grommet **710** attached to **110L** and **110R** in turn connected to the roof fabric **101** affects the height and angle of front vestibule by either draping over support structure **520** or to an alternative anchor point **600** as seen in FIG. 6. It is not necessary to have the support member **520** as shown in another embodiment. In one embodiment the front vestibule **500** is present as a direct result of having centenary arc **140F** 30 inches away from the front panel **299**.

[0092] A third issue was the use and support of a tensile structure. A tensile structure by design is a structure in which the fabric is in tension, which is in direct contrast to traditional recreational tent forms. In one embodiment it is necessary to have a structural member **520** to create a recreational tensile

structure. FIG. 5 shows a bicycle traditionally used during a recreational activity be re-purposed to become structural member 520 for this embodiment. The inclusion of the bicycle/motorcycle as support member 520 as the primary source of loft for the structure's height thus eliminates additional poles and weight, which is necessary for conventional structures. Stated differently, while the motorcycle or cycle (structural member 520) itself obviously has mass and weight, a user of the disclosed self supporting tensile tent structure will already be using the motorcycle or cycle as a means of transport, and such a user can re-purpose the same motorcycle or cycle into a structural element 520 to provide loft to the self supporting tensile tent structure, thus eliminating the necessary to carry a specialized structural element unique to the disclosed self supporting tensile tent structure. This elimination of a specialized structural element for the sake of loft results in elimination of weight and elimination of additional pieces that must be carried. Further still, setup and tear down are simplified as the motorcycle or cycle will be utilized as a mode of transport once the self supporting tensile tent structure is removed, and thus, the motorcycle or cycle requires no tear down whatsoever, in contrast to conventional solutions in which the structural elements which provide loft must be broken down into a more manageable and compact size. The loft created by the cycle/motorcycle not only provides volume to the sleeping compartment but further accentuates the visual character of the tensile structure.

[0093] This embodiment does not rely on a frame in contrast to conventional tent structures which require such a frame. Conventional recreational tents rely on their frames to provide the shape, loft and tension of the tent. This embodiment relies on the tension which is derived from the variable length tension strap with grommet 710, and loft of the fabric to provide the tent's shape. This loft and tension is created in two ways. One embodiment as depicted in FIG. 5 by leveraging the cycle/motorcycle toward the first end of the structure 171 under the front vestibule 500 and securing from the variable length tension strap with grommet 710. An alternative embodiment to create loft and tension is done by attaching the variable length tension strip with grommet 710 to a stationary object at a height greater than a height of the front panel. Another embodiment as the front vestibule 500 not being directly supported by anything but has the variable length tension strap with grommet 710 attach to an object directly and not the ground. These objects can be the following but not limited to the following: a log, a bicycle, a motorcycle, a trailer, an ATV, a wall, a bench or trees.

[0094] Support post 1020 is a 10 inch tall vertical frame member (one on each side). In one embodiment it can be utilized to create additional volume to the sleeping compartment. The length of support post 1020 may of course vary. In another embodiment support post 1020 can be eliminated, thus further decreasing the dependency on specialized frame members for the self supporting tensile tent structure 100 without hampering the functionality of the structure. The absence of support post 1020 increasing the versatility of the tensile tent structure 100 while increasing the size to weight ratio (e.g., in terms of volumetric sleeping capacity). A larger sleeping area that requires less weight to be carried is considered advantageous over conventional solutions.

[0095] Side grommet tab 310, web tab with grommet 800 and double grommet tab 1010 are the three left side ground attachments (6 total in one embodiment). These attachments

provide the footprint for the sleeping compartment. An attachment stake is placed through the grommet and then into the ground.

[0096] The use of the tensile tent structure 100 is not solely limited to the cyclist or motorcyclist users. Campers and hikers also benefit from the unique characteristics of this structure as outlined above. FIG. 6 shows the structure being utilized without structural member 520. As long as proper tensioning can be achieved on variable length tensioning straps with grommet 710 the structure can utilize anything to create loft for example a car, two trees or a picnic table.

[0097] In one embodiment the entrance 220 to the tent becomes a waterproof mat under the front vestibule 500 when unzipped which creates 5 square feet of space.

[0098] With the back panel 499 in one embodiment attaching to the roof fabric 101 18 inches away from catenary arc 140B two things are achieved. The first is the creation of the 4.5 square foot covered rear vestibule 510 used for outside storage. The second is mesh vent 410 is covered by the roof fabric 101, protecting from the elements but freely allowing the interior air and moisture to vent, controlling condensation and interior temperature.

[0099] In another embodiment the method of setting up structure 100 is done by leveraging the front vestibule over structural element 520 and variable length tension straps with grommet 710 to the ground.

[0100] Another embodiment has the variable length tension straps with grommet 710 angling upwards to a height greater than the height of the front panel 299. Examples of objects that may be higher than front panel 299 can be the following but not limited to the following: a log, a bicycle, a motorcycle, a trailer, an ATV, a wall, a bench.

[0101] Front vestibule 500 is the area between the cycle/motorcycle which provides 8.25 square feet of covered area for the user to sit and or store additional gear. This embodiment incorporates this area as part of the seamless roof fabric 101. The inclusion of front vestibule 500 into roof fabric 101 is eliminating the need for additional bulky covers or extensions to be added to structure 100 which other examples in the arts must rely upon.

[0102] In one embodiment the combination of a 30 inch roof extension (front vestibule 500) beyond the front panel 299 combined with the ability of the entrance 220 to zip down and fall to the outside resulting in a covered area to retreat from the elements. This embodiment example is a unique departure from a traditional frame supported tent.

[0103] The tent by design is expressly designed to have no frame and be set up in tension. FIG. 6 shows the alternative pitching method. In this embodiment variable length tension strap with grommet 710 of reinforced corners 110L and 110R can be attached to any solid object that stands at least as tall as front panel 299. Examples of this type of object can be but not limited to the following: A vehicle (car, truck, bus, motorcycle, two trees, a fence, a house, a bench).

[0104] In one embodiment structure 100 has 22.5 Sq. Ft. of combined interior storage and sleeping surface and 11 square feet of covered exterior storage space while it has a volume of 35.6 cubic feet of interior sleeping space.

[0105] In one embodiment loft for structure 100 is created in two ways; the first is by draping front vestibule 500 over an object and having variable length tension straps with grommet 710 angle to the ground and anchor. The second way is to have variable length tension straps with grommet 710 angle up to an object and anchor. Objects that can be used in both of

the prior embodiments can include but are not limited to a motor cycle, bicycle, ATV, a bench, a fence, trees, or a truck.

[0106] Tension for catenary arcs pair 140F, 140B and catenary arc pair 130L, 130R is done in three steps. Step one is to have back corner grommet tab 900 for both reinforced corners 120L and 120R securely anchored by inserting a ground stake or other satisfactory ground attachment device be inserted through the grommet in back corner grommet tab 900 to the ground. Step two is to have variable length tension strap with grommet 710 securely anchored this is done by anchor point 530 or anchor point 600 or in combination. Step three is to apply pressure to variable length tension strap with grommet 710 via double Barr buckle 700. This pressure is created directly by pulling on the loose end of variable length tension strap with grommet 710. Variable length tension strap with grommet 710 is run through double Barr buckle 700. The tension is held in place by double Barr buckle 700. Tensioning can only be done once variable length tension strap with grommet 710 is securely fastened. Once variable length tension strap with grommet 710 is securely attached pressure is applied to variable length tension strap with grommet 710, this is done by pulling on the loose end that is run through via double Barr buckle 700.

[0107] The step of tensioning a variable length tension strap with grommet 710 is directly related to the functionality and support of the tent and is unique to this embodiment. Other examples of this art do not provide the user the opportunity to ensure proper tension of the tent. This embodiment is unique; it is designed to account for this stretch and or distortion of the fabric over time by having the user to uniquely tension the structure 100 each usage. This distortion is further diminished by the fact fabric roof 101 which includes front vestibule 500 and rear vestibule 510 in a single seamless panel shaped with two pair of catenary arcs 140F, 140B and 130L and 130R, greatly enhancing the fabrics stability when it comes to noticeable stretch and distortion.

[0108] This embodiment is unique in several ways 240 the bathtub bottom is unique to the self supporting tensile tent structure as taught herein.

[0109] This embodiment does not rely upon any poles or additional hardware making it versatile and unique. This embodiment can repurpose existing objects one may find or have during an excursion for example a bicycle, motorcycle, trees or even a fence and be able to set up structure 100.

[0110] Element 101 and 300 are water proof membranes that are seamless in accordance with one embodiment. The utilization of an un-seamed roof fabric 101 and side panel 300L and 300R provide increased resistance to water intrusion into the sleeping compartment. Unlike other structures that must rely upon additional support poles to provide shape and loft which in turn makes it impossible to make the roof un-seamed. Stated differently, conventional tent structures cannot adopt or utilize a seamless roof section due to their reliance upon a framed structure, and thus, conventional tent structures are more susceptible to water intrusion into an interior sleeping compartment.

[0111] The absence of seams further reduces the maintenance requirements as there is no need to maintain such seams for water repellency when practicing the embodiments disclosed herein.

[0112] The design of this embodiment is a departure from a traditional frame supported tent. Its appearance is untraditional in its single angle roof fabric 101 and its vertical side panels 300L and 300R.

[0113] In one embodiment mesh vent 210 and mesh vent 410 locations in their respective front panel 299 and back panel 499 controls the air flow of the interior sleeping area reducing condensation. Further stated mesh vent 210 and mesh vent 410 placement at top edge 250 and top edge 420 respectively helps to elevate the presence condensation.

[0114] The placement of mesh vent 210 toward first end of structure 171 in front panel 299 and mesh vent 410 toward second end of structure 172 in back panel 499 in a parallel orientation to one another is a significant benefit in air flow and condensation reduction.

[0115] Another embodiment has mesh vent 210 being located under front vestibule 500 protecting it from rain penetrating the interior of the tent. The mesh vent 210 of front panel 299 allows for the occupant to view the exterior without having to unzip or otherwise remove a fabric panel. Mesh vent 210 provides a view out by working in combination with the front vestibule 500 and the height of mesh vent 210 location near the top edge 250 of front panel 299. In this embodiment the placement of mesh vent 210 at the top edge 250 of the front panel 1299 prevents exterior persons from viewing into the tent.

[0116] The near vertical sides 300L and 300R allow the tent to maximize the interior volume space.

[0117] This embodiment is comprised of 6 fabric sections as outlined in FIGS. 1 to 4. Of the 6 panels, roof fabric 101, bathtub bottom 240, front fabric 200 and side fabric 300L and 300R there are a sum total of 10 individual fabric pieces that make up the entire sleeping area, front vestibule 500 and rear vestibule 510. This small number of pieces is again unique to this particular embodiment and is directly related to the embodiments single sloping or lean-to roof design. The minimal number of fabric panels decreases the maintenance.

[0118] With catenary arcs 140F, 140B and 130L, 130R working in pairs on the perimeter of roof fabric 101 this embodiment has eliminated additional frame members traditional tents rely on. The elimination of frame work reduces weight, eases set up and reduces the number of supports needed.

[0119] Other available tents fail to do what this embodiment does. This tent has a significant increase in covered space. This embodiment provides a total of 32.25 sq. ft of covered space. This embodiment's ease of set up is of significant note as in other examples that do utilize bicycle it is required to disassemble or use part of the cycle. This embodiment does not require the disassembly of a bicycle, the use of a pump, an inner-tube, a wheel or any other individual part of the bicycle, in order to utilize the tent. Since it is not necessary to disassemble any part of the bicycle the tent can set up and taken down faster. The current embodiment allows for additional methods of set up and does not solely rely upon the use of the bicycle or any part of a bicycle or motorcycle see FIG. 6. By not relying upon a portion of the bicycle/motorcycle to set up the tent the bicycle is capable of being used at a moment's notice. The current embodiment further differs itself from other examples of the art as it can be used with a motorcycle in its entirety. The current embodiment can be attached to as little as two trees, a table or a log and still be completely functional and utilized.

[0120] In one embodiment structure 100 is using support member 520 it is of significant note that structural member 520 is not attached to the embodiment in any way.

[0121] One embodiment's utilization of the bicycle or motorcycle externally of the sleeping compartment keeps

said area cleaner and drier. With the bicycle externally located ease of set up and tear down are further enhanced as the bicycle does not need to be inserted into or attached to the tent in any fashion.

[0122] An embodiment does not rely upon any poles or frame work of any sort. With the absence of frame members, it is not necessary to assemble the standard segmented tent pole and slide them into receiving pockets within the tent as other examples of the art require. With this absence of poles for this embodiment it requires significantly less time and effort to set up than other examples require.

[0123] With the parallel orientation of mesh vent 210 located in front panel 299 and mesh vent 410 located in back panel 499 to one another the air flow is enhanced and condensation is reduced. In one embodiment mesh vent 210 and mesh vent 410 are unencumbered by flaps and zippers current examples in the arts have.

[0124] One embodiment has mesh vent 210 located in front panel 299 and mesh vent 410 located in back panel 499 protected from weather by their placement under front vestibule 500 and rear vestibule 510 respectively.

[0125] An embodiment allows the user to enter via entrance 220 from a covered vestibule 500, unlike other examples that have the entry on a weather exposed side.

[0126] In one embodiment the front vestibule 500 is draping over structural member 520 bicycle/motorcycle to provide weather coverage for the bicycle. Unlike other examples of the art do not provide weather protection for the bicycle/motorcycle or structural member 520.

[0127] While the subject matter disclosed herein has been described by way of example and in terms of the specific embodiments, it is to be understood that the claimed embodiments are not limited to the explicitly enumerated embodiments disclosed. To the contrary, the disclosure is intended to cover various modifications and similar arrangements as are apparent to those skilled in the art. Therefore, the scope of the appended claims are to be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements. It is to be understood that the above description is intended to be illustrative, and not restrictive. Many other embodiments will be apparent to those of skill in the art upon reading and understanding the above description. The scope of the disclosed subject matter is therefore to be determined in reference to the appended claims, along with the full scope of equivalents to which such claims are entitled.

what is claimed is:

1. A tensile tent structure comprising:

a roof component to be positioned above a ground surface; a bathtub bottom to be positioned below the roof component and further to be positioned atop the ground surface;

a front panel vertically oriented toward a first end of the tensile tent structure and attached to the roof component by a top edge of the front panel and further attached to the bathtub bottom by a bottom edge of the back panel; a back panel vertically oriented toward a second end of the tensile tent structure and attached to the roof component by a top edge of the back panel and further attached to the bathtub bottom by a bottom edge of the back panel;

a pair of side panels, each attached to the roof component, the bathtub bottom, the front panel, and the back panel;

a first pair of reinforced corners at the second end of the tensile tent structure to anchor the tensile tent structure to the ground surface;

a supporting member to create loft for the tensile tent structure toward the first end of the tensile tent structure by elevating the roof component above the ground surface; and

a second pair of reinforced corners at the first end of the tensile tent structure, the second pair of reinforced corners to anchor the tensile tent structure to the ground surface and induce tension into the roof component when erected.

2. The tensile tent structure of claim 1, wherein the supporting member comprises a vehicle which is re-purposed as the supporting member.

3. The tensile tent structure of claim 1:

wherein the supporting member comprises one of a bicycle, a motorcycle, a natural object, a bench, a fence, or an All Terrain Vehicle (ATV); and

wherein the supporting member is re-purposed as the supporting member and is not provided with or packed with the tensile tent structure when stored.

3. The tensile tent structure of claim 1:

wherein the roof component comprises a seamless fabric portion as the roof component; and

wherein the front panel and back panel are attached to the roof component without separating the seamless fabric portion making up the roof component.

4. The tensile tent structure of claim 1, wherein a sleeping compartment is formed by the encasement of the bathtub bottom, the front panel, the back panel and the two side panels.

5. The tensile tent structure of claim 4, wherein the sleeping compartment is made stitchless by all attachments between fabrics of the bathtub bottom, the front panel, the back panel and the two side panels being exterior to the sleeping compartment.

6. The tensile tent structure of claim 1:

wherein the front panel vertically oriented toward the first end and attached to the roof component by the top edge of the front panel comprises the front panel being attached with a 30 inch setback from the first end of the roof component; and

wherein the back panel vertically oriented toward the second end and attached to the roof component by the top edge of the back panel comprises the back panel being attached with an 18 inch setback from the second end of the roof component.

7. The tensile tent structure of claim 1, wherein the tensile tent structure when erected forms a sloping angle downward from the first end of the tensile tent structure to the second end of the tensile tent structure.

8. The tensile tent structure of claim 1, further comprising:

a pair of variable length tensioning straps, each connected with the second pair of reinforced corners at the first end of the tensile tent structure to anchor the tensile tent structure to the ground surface and to vary the tension induced into the roof component when erected.

9. The tensile tent structure of claim 1, wherein the roof component comprises two pairs of catenary arcs that, when tension is induced into the roof component of the tensile tent structure when erected, the pairs of catenary arcs provide structural stability by keeping the roof component taut in proportion to the tension induced when erected.

- 10.** The tensile tent structure of claim 1:
wherein the front panel comprises a first mesh vent;
wherein the back panel comprises a second mesh vent; and
wherein the first and second mesh vents are oriented in parallel to one another to induce increased airflow and to further reduce condensation within a sleeping compartment of the tensile tent structure.
- 11.** The tensile tent structure of claim 1, further comprising:
a front vestibule attached to the roof component at the first end to provide a covered entry into the tensile tent structure when erected; and
a rear vestibule attached to the roof component at the second end to provide a covered storage when the tensile tent structure is erected.
- 12.** The tensile tent structure of claim 1:
wherein the supporting member is one of a motorcycle or a bicycle;
wherein the roof component covers the motorcycle or bicycle when the tensile tent structure is erected; and
wherein the erected tensile tent structure further secures the motorcycle or bicycle from tampering or theft.
- 13.** A method comprising:
erecting a tensile tent structure as is described in claim 1 to form an interior sleeping compartment, of the tensile tent structure.
- 14.** A tensile tent structure comprising:
a roof component to be positioned above a ground surface;
a bathtub bottom to be positioned below the roof component and further to be positioned atop the ground surface;
a front panel vertically oriented toward a first end of the tensile tent structure and attached to the roof component by a top edge of the front panel and further attached to the bathtub bottom by a bottom edge of the back panel;
a back panel vertically oriented toward a second end of the tensile tent structure and attached to the roof component by a top edge of the back panel and further attached to the bathtub bottom by a bottom edge of the back panel;
a pair of side panels, each attached to the roof component, the bathtub bottom, the front panel, and the back panel;
a first pair of reinforced corners at the second end of the tensile tent structure to anchor the tensile tent structure to the ground surface;
a supporting member to create loft for the tensile tent structure toward the first end of the tensile tent structure by elevating the roof component above the ground surface; and
a second pair of reinforced corners at the first end of the tensile tent structure, the second pair of reinforced corners to anchor the tensile tent structure to a stationary object at a height greater than a height of the front panel, wherein the second pair of reinforced corners induce tension into the roof component when erected.
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