United States Patent [19]

Williams

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[54] **UMBRELLA TENT**

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[52] **U.S. Cl.** **135/2**

[51] **Int. Cl.** **A45f 1/04**

[58] **Field of Search** ..... 135/2, 4 R, 3 C; 74/89.15, 424.8, 547

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[57] **ABSTRACT**

A tent having a foldable frame provided with flexible legs which are bowed outwardly, when the frame is fully unfolded into a mutually supporting relationship with an enclosing canvas cover. A mechanical drive is provided in the frame for tensioning the legs and the canvas cover, the drive providing a positive lock against accidental collapse of the tent.

2 Claims, 8 Drawing Figures

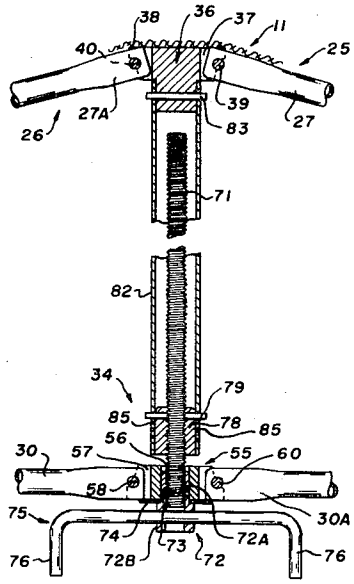


Fig. 1.

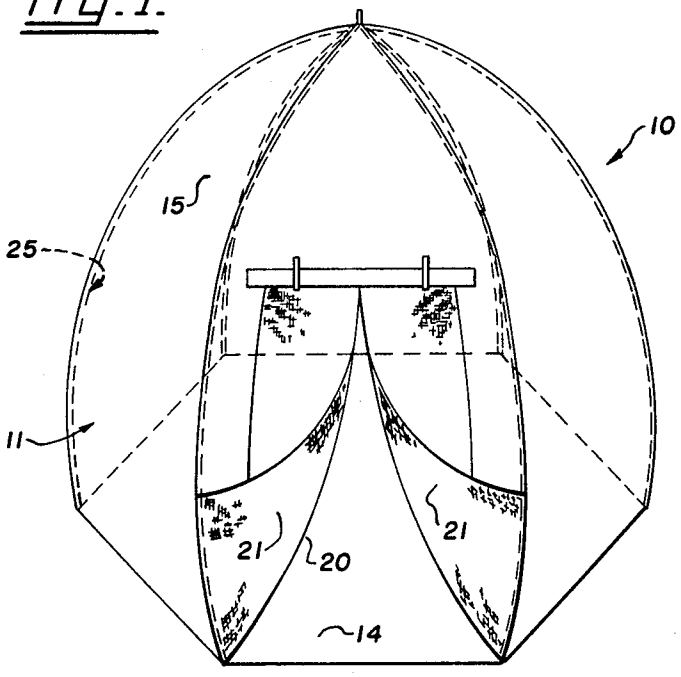


Fig. 2.

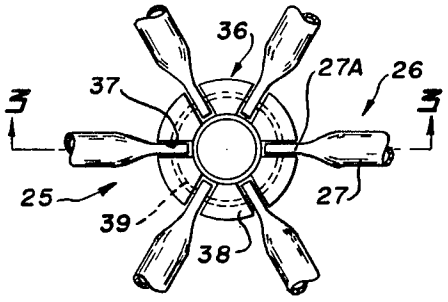


Fig. 6.

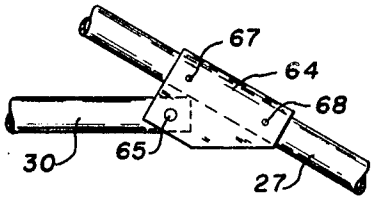


FIG. 3.

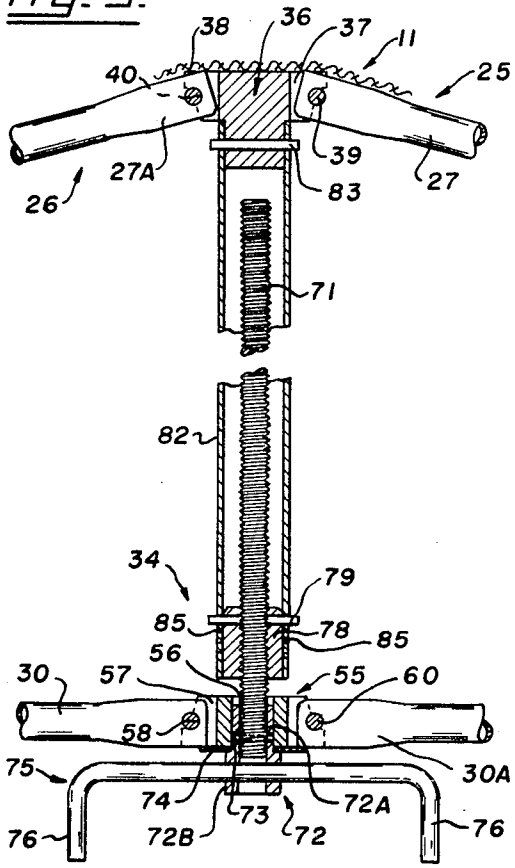


FIG. 3A.

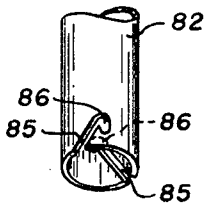


FIG. 4.

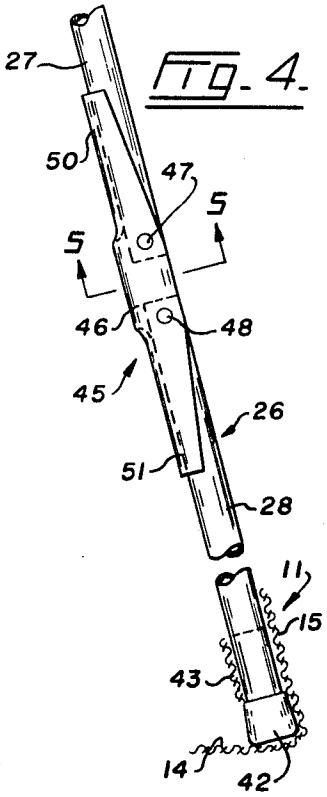


FIG. 7.

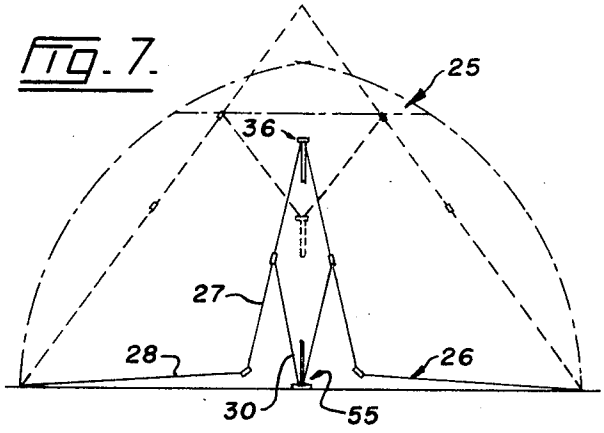
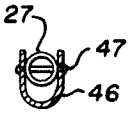


FIG. 5.



UMBRELLA TENT

My invention relates to umbrella tents and more particularly to a tent having a supporting frame which does not require a center pole.

Whenever an attempt is made to eliminate the center pole of a tent, it is generally found that the resulting frame structure is heavy and cumbersome or may be difficult and time consuming to assembly. Very often it is a job for at least two people to erect and dismantle such a tent and special tools and the like are sometimes required which add to the difficulty. Most tents without a center pole have umbrella-like frames which must be tensioned and locked in opened position and if the lock mechanism is accidentally tripped by an occupant of the tent, or is deliberately tampered with by a child for example, there is a very strong likelihood the entire structure will snap shut and possibly injure the people in the tent or in the immediate vicinity.

I have overcome the above as well as other disadvantages of conventional poleless tents by providing a lightweight foldable frame having flexible legs which are bowed outwardly in order to lend the necessary rigidity to the structure. When properly tensioned in this manner, the frame and canvas enclosure supported thereon support one another so that no additional ropes are required to brace the tent. The actual tensioning of the frame is done with mechanical means which makes it possible for one person to erect and/or dismantle the tent without undue effort and in relative safety. The frame is foldable with the canvas enclosure into a compact bundle convenient for storage.

In drawings which illustrate a preferred embodiment of the invention,

FIG. 1 is a perspective view of the umbrella tent, in accordance with the present invention,

FIG. 2 is a plan of the upper spider and associated parts,

FIG. 3 is a vertical section taken on the line 3—3 of FIG. 2,

FIG. 3A is a perspective view of the lower end of the tube showing the spiral slots and sockets,

FIG. 4 is a fragmentary elevation of a resilient leg,

FIG. 5 is a transverse section taken on the line 5—5 of FIG. 4,

FIG. 6 is an elevation of a part of leg with an end of a spreader attached thereto, and

FIG. 7 is a schematic view showing the different positions assumed by the frame during folding and unfolding of the tent.

Referring to FIG. 1, the numeral 10 indicates generally an umbrella tent comprising an enclosure 11. Preferably, the enclosure 11 is formed of a lightweight, waterproof canvas having parts which are sewn together to form a floor 14 and a cover 15. The floor 14 is a plane hexagonal sheet of canvas and the cover 15 is substantially dome-shaped when the tent is erected. A suitable entrance 20 is provided in cover 15 by a pair of foldable flaps 21.

The enclosure 11 is supported by a frame 25 which is indicated by dotted lines only in FIG. 1. Referring now briefly to FIG. 7, the frame 25 will be seen to comprise a number of legs 26 which are circumferentially spaced around the dome-shaped cover 15 and are pivotally connected together at their upper ends. Each leg is made up of hingedly connected upper and lower sections 27 and 28. An equal number of spreaders 30 are

pivotally connected together at one end and are similarly connected at the opposite ends one to each upper section 27. Centrally disposed tensioning means 34 interconnects the pivoted ends of the legs 26 and the spreaders 30.

As shown in FIG. 2 and 3, frame 25 has six legs all told and these legs 26 are connected together at their upper ends by a spider 36. The spider 36 is a plug preferably formed of a suitable plastic and having radial notches 37 extending into a upper flange 38 thereon. Leg sections 27 have flattened upper ends 27A which are lodged in the notches 37 where they are secured by means of a ring 39, this ring being seated in an annular groove 40 (FIG. 3) formed in flange 38. Thus, the legs 26 are securely locked to the spider 36 while being free to swing about the ring 39 from the extended or unfolded position shown in FIG. 3 to a folded position which will be described in detail later.

Each leg 26 preferably is constructed of aluminum alloy tubing for lightness, strength and flexibility. As shown in FIG. 4, a rubber foot 42 is secured to the lower end of leg section 28. Above this foot, a band 43 may be used to secure the leg section 28 to the cover 15.

Hinge means generally indicated at 45 is provided to connect adjacent ends of the leg sections 27 and 28, see particularly FIG. 4. As shown in FIG. 4 and also in FIG. 5, the means 45 comprises a channel-like bar 46 which partially encloses adjacent ends of the sections 27 and 28. Longitudinally spaced hinge pins 47 and 48 connect the ends of the sections 27 and 28 to the sides of the bar 46. Beyond the hinge pins 47 and 48, the bar 46 is reduced in diameter slightly to form stops 50 and 51. This particular hinge means 45 allows the sections 27 and 28 to fold inwardly to a position where they are substantially parallel to one another. When the sections 27 and 28 are unfolded into alignment as shown in FIG. 4, the stops 50 and 51 engage the upper and lower leg sections to prevent them from swinging outwardly beyond the FIG. 4 position.

The spreaders 30 are also made of aluminum tubing and their flattened inner ends 30A are pivotally connected to a spider 55, see FIG. 3. This plastic spider 55 has a bore 56, radial notches 57, and a peripheral groove 58. The flattened ends 30A of the spreaders are received in the notches 57 and are secured therein by a ring 60 seated in the groove 58.

Referring now to FIG. 6, the outer ends of each spreader 30 is connected to a leg section 27 by a bracket 64 and pivot pin 65. Bracket 64 is a U-shaped band of metal which fits over the section 27 and is secured thereto by fasteners 67 and 68.

The tensioning means 34 for umbrella tent 10 is used to apply final tension to the cover 11 and frame 25 when the tent is being erected and to remove that tension prior to collapsing and folding the tent. As shown in FIG. 3, the tensioning means 34 comprises a threaded rod 71 which is fitted at its lower end with a sleeve 72. A transverse pin 73 non-rotatably secures sleeve 72 to the rod 71. This sleeve 72 has a reduced upper end 72A which enters the bore 56 of the spider 55 and serves as a bearing for the rod 71. A washer 74 is fitted between upper end 72A and lower end 72B of the sleeve. This lower end 72B serves as a hub for a crank 75, the crank preferably has two downwardly extending handles 76. Suitable means, not shown, is pro-

vided to secure the sleeve 72 against withdrawal from the bore 56 while allowing it to rotate therein.

Mounted on the rod 71 is a nut 78 which is fitted with a pair of pins 79, the pins being horizontally aligned and projecting a short distance from the side of said nut. A tube 82 normally encloses the rod 71 and the upper end of this tube is secured to spider 36 by a transverse pin 83. The lower end of the tube 82 is provided with a pair of slots 85, see particularly FIG. 3A, the slots being diametrically opposed and spirally inclined in opposite directions. At their upper ends, the spiral slots 85 connect with a pair of sockets 86. Thus, the rod 71 and the nut 78 can be entered into the tube 82 so that the pins 79 slide up the slots 85 and are lodged in the sockets 86. This couples the rod 71 to the tube 82 and holds the nut 78 against rotation so that, when the crank 75 is operated to rotate said rod, the nut 78 is caused to travel along the rod so as to move the tube 82, and parts associated therewith, towards or away from the spider 55.

To erect the umbrella tent 10, the floor 14 is spread out over the ground and the frame 25 initially is unfolded to the solid line position shown in FIG. 7. The person erecting the tent stands near the center of the floor 14 and lifts the frame 25 by grasping it at or near the spider 55. At this stage, only the cover 15 and the lightweight frame 25 must be raised and no great effort is required to lift these parts so that said frame will assume the dotted line position of FIG. 7. Once the sections 27 and 28 of the legs are moved into alignment, slightly more effort is required to complete the unfolding of the tent and the tensioning means 34 is now brought into play.

The man continues to support the structure with one hand and with the other, enters the rod 71 and the nut 78 into the tube 82 whereby the pins 79 can be moved along the slots 85 and into the sockets 86. The two separable parts of the tensioning means are now interconnected and the spiders 36 and 55 at this time, of course, are widely spaced apart and the nut 78 is on the upper end of the rod 71. By turning the crank 75 to rotate the rod 71 in the appropriate direction, the spiders 36 and 55 are moved towards one another. Tube 82 moves downwardly with the nut 78 and carries with it the spider 36 and parts connected thereto. The leg sections 27 and 28 are prevented from folding outwardly by the hinge means 45 and therefore this downward movement of the spider 36, plus the outward thrust exerted by the spreaders 30, causes the legs 26 to bow outwardly. Continued operation of the crank 75 in the same direction is now resisted by the tension applied to the leg 26 and the almost fully stretched cover 15. Eventually the frame 25 will assume the position shown by chain dotted lines in FIG. 7 where it will be found the cover 15 has been stretched a suitable amount.

The tent 10 is now opened to its full extent and the enclosure 11 and frame 25 now support one another. In other words, the canvas enclosure 11 prevent the legs 26 from spreading outwardly and the frame 25 supports the enclosure against collapse. It will be noted that the tensioning means 34 provides a positive connection between the spider 36 and 55 so that there is no danger of the structure being accidentally snapped into a semi-collapsed condition. Since there is no need for a center pole, an unobstructed space is provided within the tent.

In order to fold the tent 10 for storage, the tension on the legs 26 and the cover 11 must first be released and the tensioning means 34 is used for this purpose as well. The tenter again stands near the center of the floor 14 and rotates the crank 75 to move the nut 78 up the rod 71. This movement progressively relieves the leg and cover tension until a point is reached when the leg sections 27 and 28 are aligned and the spreaders 30 converge downwardly. The nut 78 by now will be near the upper end of the rod 71 and sufficient tension will have been taken off the several parts of the structure to enable the two separable parts of the tensioning means 34 to be disconnected. This is done by lifting the tube 82 and turning the nut 78 counterclockwise (FIG. 3) to allow said nut, and the rod 71, to be withdrawn from said tube. The tent now can be collapsed and folded without further mechanical assistance. The man then lowers the spider 55 to the floor 14 and at the same time retreats through the entrance 20. The sections 27 and spreaders 30, with a dome-shaped part of the cover 11 attached thereto, are now laid upon a segment of the remainder of the cover and the floor 14. The remaining parts of the tent are gathered together and are rolled up in the canvas with the floor 14 on the outside and forming a bag for the tent parts. With the various parts of the frame 25 folded and disposed substantially parallel to one another, the entire length of the folded tent is only slightly greater than the length of a leg section and no difficulty is encountered in storing the bundle in the baggage compartment of the car or the like.

From the foregoing, it will be apparent I have provided a tent which is very easy to erect and dismantle. The tensioning means 34 can be used to adjust the tension of the cover 15 any time it is necessary to do so while the tent is in use. For example, the canvas may be soaked with rain and become undesirably taut. This condition can be relieved by operation of the means 34 and, when the canvas is dried out, appropriate tension can be reapplied by the same means.

I claim:

1. An umbrella tent comprising an enclosure of foldable material having a floor and a substantially dome-shaped cover, a foldable frame within the enclosure and having a plurality of flexible legs circumferentially spaced around the cover, a first spider pivotally connecting the upper ends of the flexible legs, each of the flexible legs having upper and lower sections hingedly connected together, a radial spreader pivotally connected at one end to each upper section, a second spider pivotally connecting the inner ends of the radial spreaders, a threaded rod journalled in the second spider and projecting vertically therethrough, a nut mounted on the threaded rod, and having a laterally projecting pin, a tube non-rotatably secured at the upper end thereof to the first spider, said tube having a socket and a lower end slot providing access thereto, said pin on the nut entering the socket to releasably couple said nut to the tube, and an operating crank secured to a lower end of the threaded rod below the second spider.

2. An umbrella tent comprising an enclosure of foldable material having a substantially dome-shaped cover, a foldable frame supporting the enclosure and having a plurality of flexible legs, said flexible legs each being formed of upper and lower sections, hinge means connecting adjacent ends of the upper and lower sections, a first spider pivotally connecting the upper ends

of the flexible legs, a spreader pivotally connected at one end to each upper section, a second spider below the first spider and pivotally connecting the inner ends of the spreaders, tensioning means operatively connecting the first and second spiders and being manually operable to vary the spacing between said spiders, said tensioning means comprising a threaded rod journalled in the second spider, a nut on the threaded rod, a tube secured at the upper end thereof to the first spider and releasably secured at the opposite end to the nut, and an operating crank on a lower end of the threaded rod below the second spider.

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