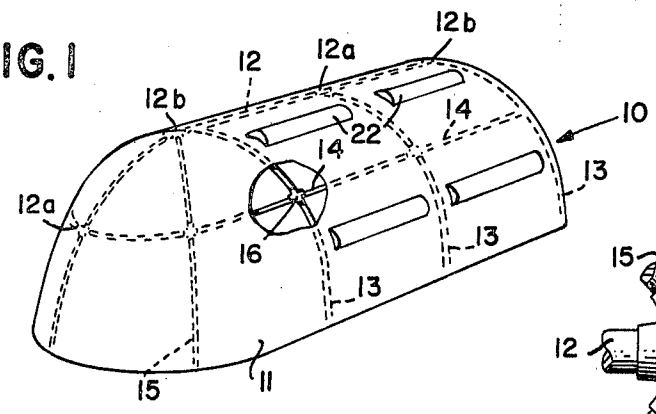
Nov. 25, 1969 J. A. McCONNELL ET AL 3,480,023

COLLAPSIBLE TENT

Filed May 31, 1968 2 Sheets-Sheet 1

FIG. 1



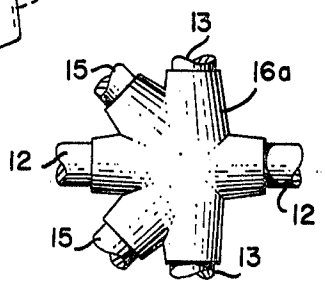
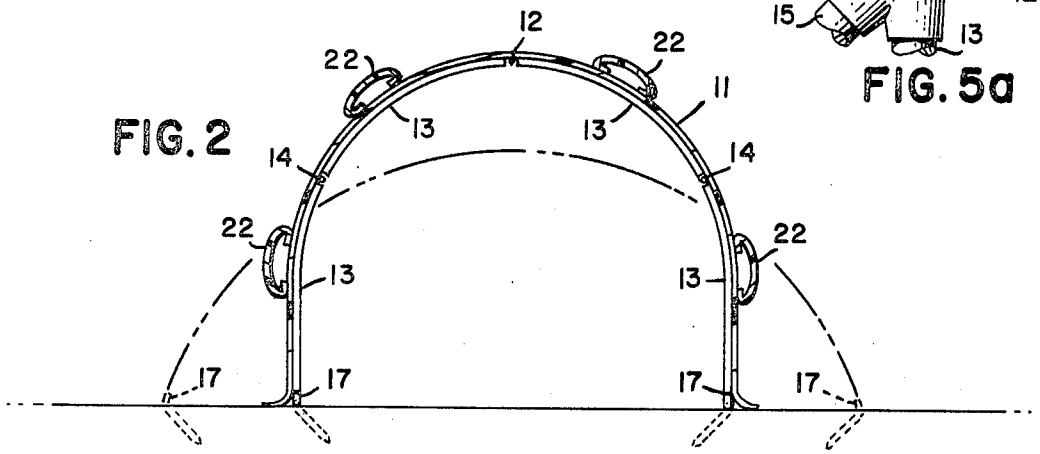


FIG. 5a

FIG. 2



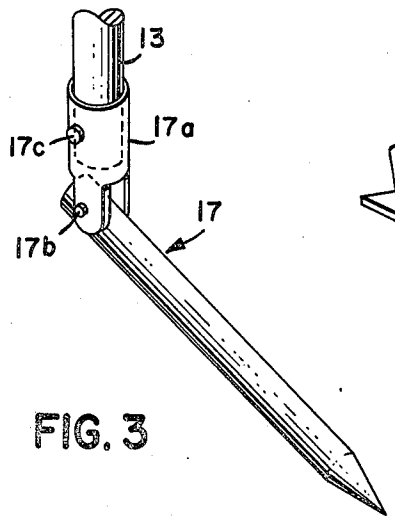


FIG. 3

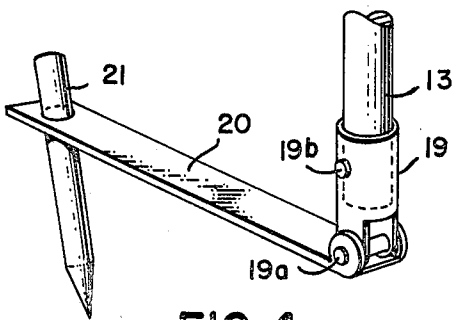


FIG. 4

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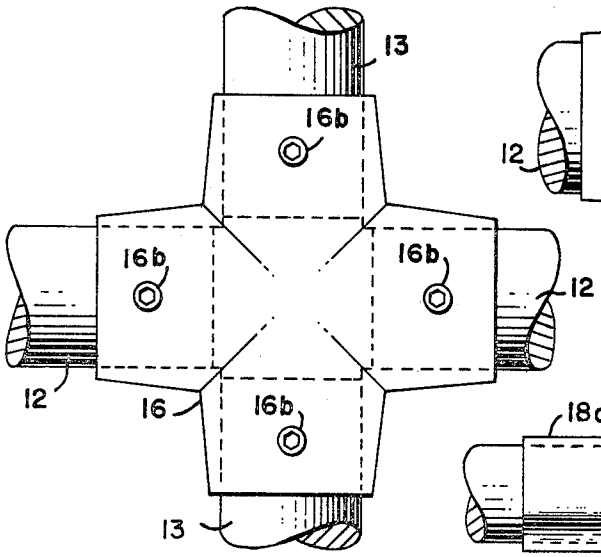


FIG. 5

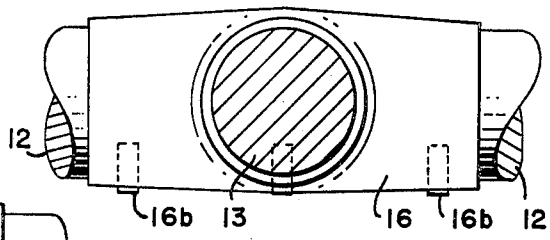


FIG. 6

FIG. 7

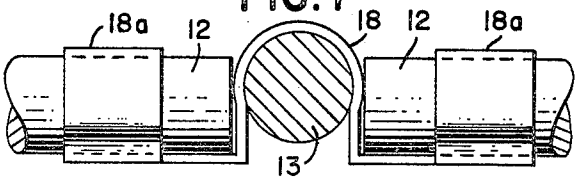
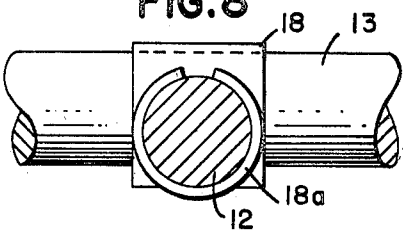


FIG. 8



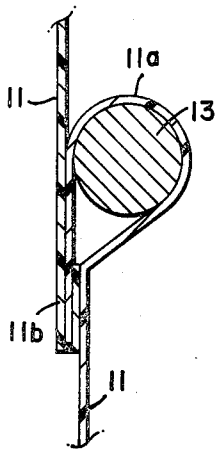


FIG. 9

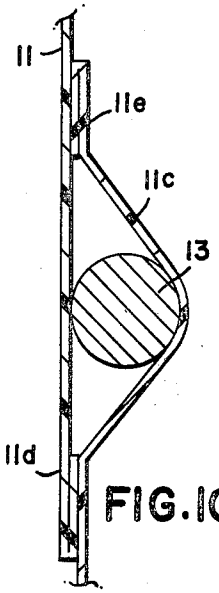


FIG. 10

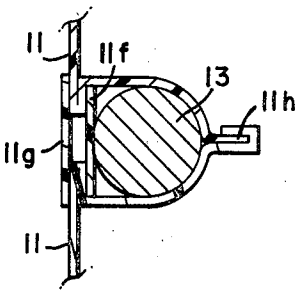


FIG. 11

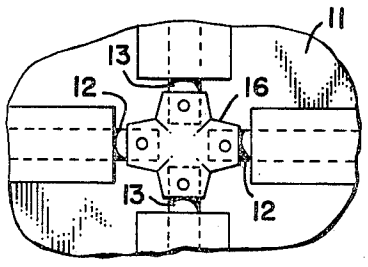


FIG. 12

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3,480,023

COLLAPSIBLE TENT

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Int. Cl. A45f 1/00
U.S. Cl. 135—1 1 Claim

ABSTRACT OF THE DISCLOSURE

Tent structure adapted to cover different areas. The flexible tent cover is supported by lightweight resilient structural members which are bowed to form arches and have the bottom end parts thereof clamped in sockets pivotally attached to stakes which are adapted to be spaced at predetermined distances depending upon the amount of arching of the structural members and height of the tent.

Description of the invention

This invention relates to a tent, and more particularly to a collapsible tent which may be readily collapsed and arranged into a compact form for portability.

An object of this invention is to provide an improved tent which may be made in different sizes and which is adapted to be supported by arched members, the ends of which are adapted to be anchored in the ground so that the height of the arch may be adjusted according to the purpose for which the tent is to be used.

Another object of this invention is to provide an improved tent structure made of lightweight material and which is supported by flexible members constructed so that the stress on the lightweight covering material is reduced to a minimum, said members flexing with wind or air currents so that the tent tends to adjust to air flow and aerodynamic resistance thereof is minimized.

Another object of this invention is to provide an improved tent structure in which the various supporting members are made of flexible material such as Fiberglas, spring steel or the like, said members being designed so that they are interchangeable, whereby erecting of the tent is simplified.

Other and further objects of this invention will be apparent to those skilled in the art to which it relates from the following specification, claim and drawing.

In accordance with this invention there is provided a tent structure employing lightweight covering material which may be of plastic, cloth or the like. This lightweight covering is adapted to be supported by flexible ribs and purlins which may be made of Fiberglas, spring steel or the like. The structural members such as ribs and purlins may be made of uniform lengths so that they are interchangeable to facilitate erecting the tent. These members may be made by joining several flexible members end to end by suitable coupling devices and the ends of each of the ribs are anchored in sockets which are pivotally attached to stakes which are adapted to be driven into the ground at predetermined spaces so that the ribs are maintained in predetermined arched position. The height of the arched ribs is determined by the spacing between the anchoring stakes, and this height may be adjusted by adjusting the distances between the anchoring stakes so that different heights may be provided to the tent, depending upon the use to which the tent is to be placed.

Further details of this invention will be apparent to those skilled in the art to which it relates from the following specification, claim and drawing in which, briefly:

FIG. 1 is a perspective view of a tent structure embodying features of this invention;

FIG. 2 is a sectional view showing the tent structure set up at a certain predetermined height in solid lines and for a different predetermined height in broken lines;

FIG. 3 is a detail view of one of the anchoring stakes employed in this tent structure;

FIG. 4 is a detail view of another form of anchoring stake employed in this tent structure;

FIG. 5 is a detail view of a coupling member empolyed for joining four members of the tent structure;

FIG. 5*a* is a detail view of a coupling member for joining six members of the tent structure;

FIG. 6 is a side view of the coupling member shown in FIG. 5;

FIG. 7 is a detail view of another type of coupling member for joining four members;

FIG. 8 is a side view of the coupling member shown in FIG. 7;

FIGS. 9, 10 and 11 are sectional views of different types of rib pockets provided to the flexible covering material employed in this tent structure; and

FIG. 12 is a detail view of a part of the flexible tent covering and tent ribs joined by the coupling element shown in FIG. 5.

Referring to the drawing in detail, reference numeral **10** designates the tent structure generally which is provided with a flexible covering **11** of plastic, canvas or like material. This tent structure is provided with a ridge pole **12** which is made up of a plurality of sections of either tubular or solid members of Fiberglas, plastic, spring steel or the like, which are resilient so that they may be bowed but are also of high strength.

These sections are joined together at points **12***a* by four-way coupling members **16** such as shown in detail in FIG. 5, and at points **12***b* by six-way coupling members which are similar to the four-way coupling member except that each of them is provided with six sockets spaced as shown in FIG. 5*a*. A plurality of rib members **13** which are arched and which extend across the ridge pole **12** and also across the purlins **14** are also made up of sections of predetermined length of either solid or tubular members joined to each other and to the ridge pole **12** and purlins **14**. Four-way coupling members such as the coupling **16** are used in locations where four members are joined and six-way coupling members **16***a* are used at the locations **12***d* where six members are joined.

Each of the sockets of coupling member **16** is provided with a threaded hole and set screw, such as the set screw **16***b*, and the set screws are adapted to be tightened to grip the structural members **12** and **13**, shown in FIG. 5. Another type of coupling member **18** illustrated in FIGS. 7 and 8 may be provided for coupling the structural members. The coupling member **18** is adapted for use where the ribs **13** do not have a joint at the top where these ribs cross the ridge pole **12**. In this case the coupling member **18** is provided with a central portion which arches around the top of the rib **13** and frictionally engages the rib. The opposite ends of the coupling member **18** are provided with sockets **18***a* which are adapted to receive the end parts of the ridge pole sections **12** and frictionally grip those end portions. Coupling members **18** may also be provided on the sides of the ribs **13** to receive the end portions of the purlins **14** in the sockets **18***a* thereof in cases where each of the ribs **13** is one continuous member without joints.

The ends of the ribs **13** are adapted to be positioned in the sockets **17***a* of the stakes **17** and clamped in these sockets by set screws **17***c*. The sockets **17***a* are attached to the stakes **17** by pivot pins such as the pin **17***b*, as shown in FIG. 3 so that the angular position of the socket with respect to the body of the stake may be adjusted when the ribs of the tent are arched at different heights.

A modified form of stake is shown in FIG. 4 which may be used in place of the stake **17**. The stake shown in FIG. 4 is provided with a socket **19** which is adapted to receive the end part of the rib and, of course, two of these stakes are employed for each rib, that is, one at each end. The socket **19** is pivotally attached by the pivot pin **19***a* to the horizontal member **20** which is adapted to lie flat on the ground. The member **20** is provided with a hole for the stake **21** and the stake may be removably positioned in this hole or it may be attached by welding or the like. A set screw **19***b* is threaded to the socket **19** for clamping the end part of the rib **13** in the socket. Where the stake shown in FIG. 4 is employed, the pegs **21** are positioned inside of the tent structure a short distance, depending upon the length of the horizontal member **20**.

The tent covering **11** is provided with rib-receiving pockets, such as shown in FIGS. 9, 10 and 11. The rib pocket shown in FIG. 9 is formed by taking an edge portion **11***a* of one of the sheets **11** used to make the tent covering and turning it inward to form a pocket adapted to receive the structural member such as the rib **13**. The edge portion **11***a* is then positioned in a fold formed in the edge portion **11***b* of another sheet **11** and, in cases where the sheets **11** are of plastic, these folded portions may be heat-sealed. In cases where the sheets **11** are of canvas, then these folded portions may be sewed together. The heat-sealing and sewing are of course performed before the sheets **11** are assembled with the structural members which may be inserted into the completed pockets.

Another type of rib pocket is shown in FIG. 10 in which the end portion **11***c* of one of the sheets **11** provided between the joints **11***d* and **11***e* is sufficient to receive the structural member **13**. The joints **11***d* and **11***e* may also be heat-sealed or sewed, as in the case of the pocket shown in FIG. 9. The pocket shown in FIG. 11 is made from equal parts of each of the sheets **11** which are shown looped around the structural member **13** and joined at **11***h* by either heat-sealing or sewing. This pocket is provided with two reinforcing strips **11***f* and **11***g*. The sides of these reinforcing strips are attached by heat-sealing or sewing to folded over parts of the sheets **11***f*. In the manufacture of the pocket shown in FIG. 11, the reinforcing strips **11***f* and **11***g* are of course attached to the sheets **11** before the edges of these sheets are joined at **11***h*. Furthermore, in large tents several sheets **11** may be joined by conventional fastening means such as zippers to facilitate handling thereof, and the zippers may be provided in such locations that they need not be closed until after the structural members are inserted into the pockets and the tent is ready to be erected or is already erected.

The pockets shown in FIGS. 9, 10 and 11 are adapted to be positioned on the inside of the tent covering **11**, as shown in FIG. 2, or these pockets may be positioned on the outside of the tent and suitable openings provided in these pockets at the points where the coupling members, such as the four-way coupling member **16** shown in FIG. 12, are to be located, so that these coupling members are accessible and also so that it is easier to insert

the structural members into the pockets. The tent covering **11** may also be provided with inflatable air pockets **22**, each of which may be provided with a bicycle-type valve so that the pockets **22** may be inflated with a certain air pressure to lend some rigidity to the sheet covering **11** of the tent.

While we have shown a preferred embodiment of the invention, it will be understood that the invention is capable of variation and modification from the form shown so that the scope thereof should be limited only by the proper scope of the claim appended hereto.

What we claim is:

1. In an elongated tent structure having at least one end of oval shape, said tent structure being readily collapsible so that it is adapted to be arranged into a compact form which is easily portable, the combination comprising a plurality of lightweight resilient structural members of predetermined lengths, detachable coupling members each having a plurality of socket means receiving end portions of selected ones of said structural members serving as ribs, and other selected ones of said structural members serving as the tent ridge pole and as purlins, at least one end portion of the tent structure being constructed with additional selected ones of said structural members radiating from at least one of the ends of said ridge pole, said last mentioned structural members being curved downward from said ridge pole to form an oval shape with selected purlins attached to the detachable couplings thereof, a sheet of flexible material, said sheet having elongated pockets receiving said structural members, said elongated pockets having openings through which said coupling members are attached to said structural members, and stake means having means pivotally attaching the bottom ends of said ribs thereto, one end of each of said ribs being attached to one of a pair of said stake means and the other end being attached to the other of said pair, the stake means of said pair being adapted to be spaced apart different selected predetermined distances determined by the area to be covered by said sheet.

References Cited

UNITED STATES PATENTS

1,268,459	6/1918	Hjermstad	135—15
1,730,565	10/1929	Flintjer	135—15
2,144,747	1/1939	Adams	135—1
2,345,377	3/1944	Bowen	135—1
2,755,009	7/1956	Parker	135—15 X
2,823,683	2/1958	Smith et al.	135—3
2,948,047	8/1960	Peeler et al.	135—1
3,085,586	4/1963	McDonough	135—4
3,371,671	3/1968	Kirkham	135—1

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U.S. Cl. X.R.

135—3, 7.1