

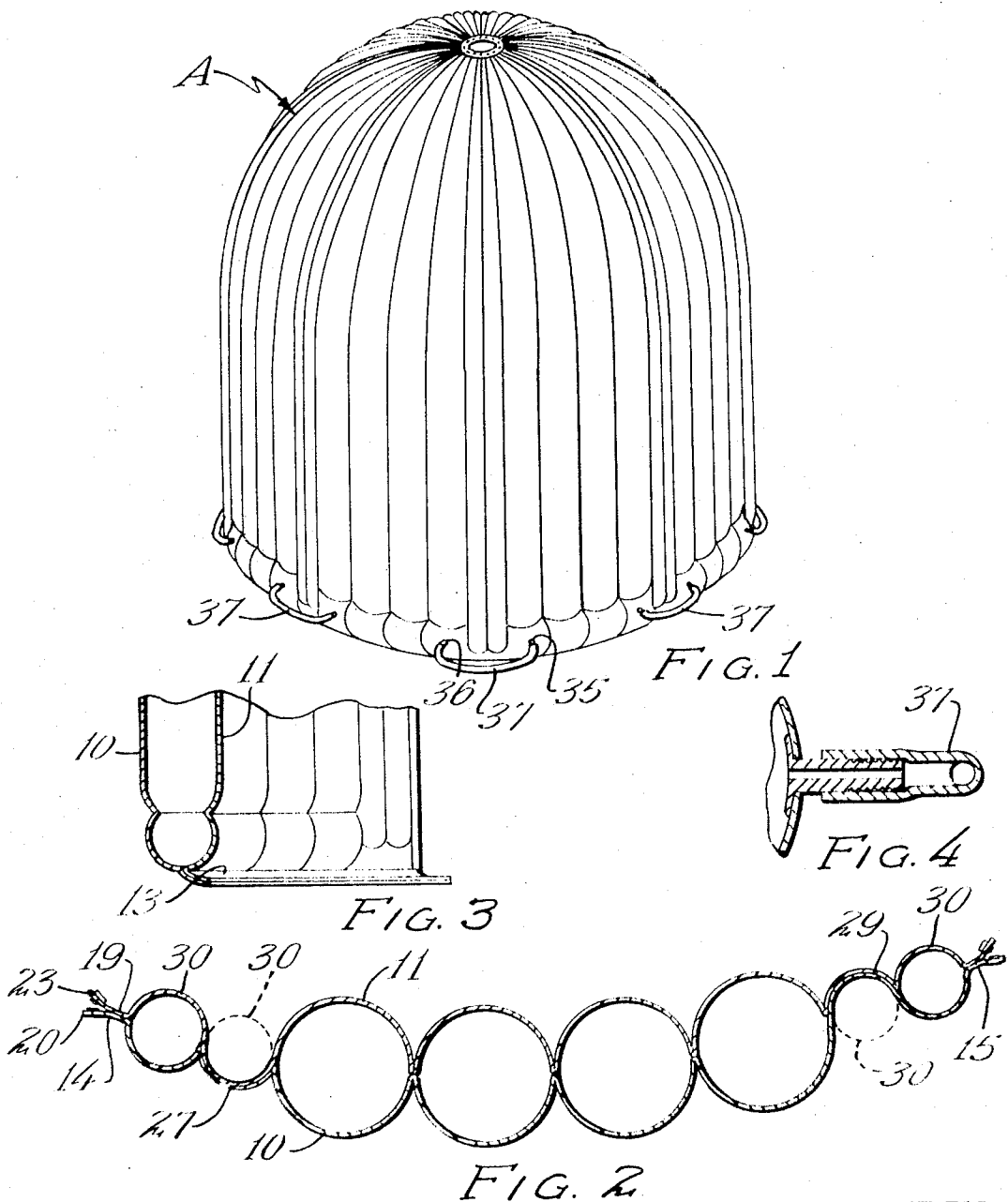
July 22, 1969

C. E. BATTERSON
INFLATABLE AIR TENT

3,456,403

Filed June 19, 1967

3 Sheets-Sheet 1



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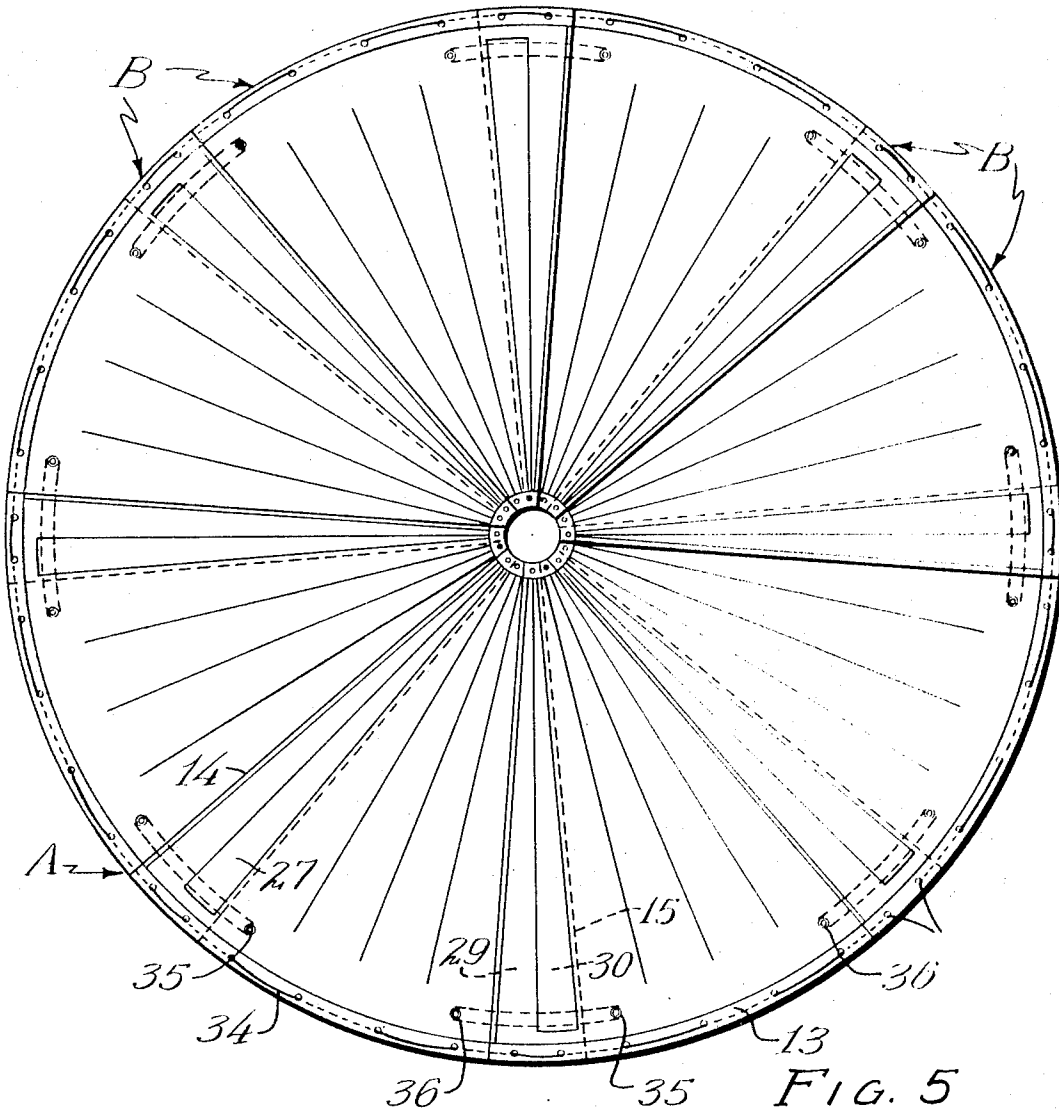
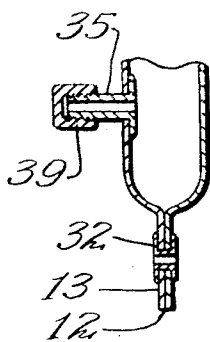


FIG. 6

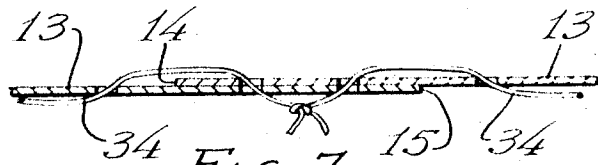


FIG. 7

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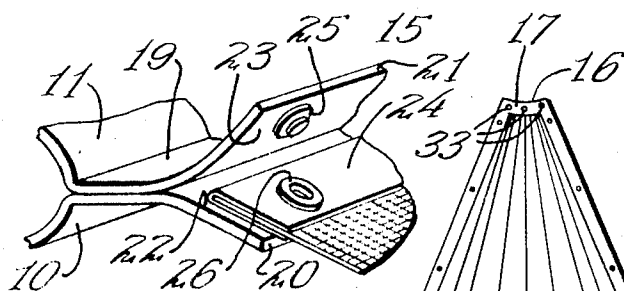


FIG. 9

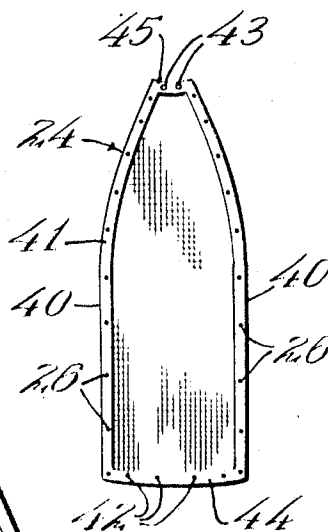


FIG. 10

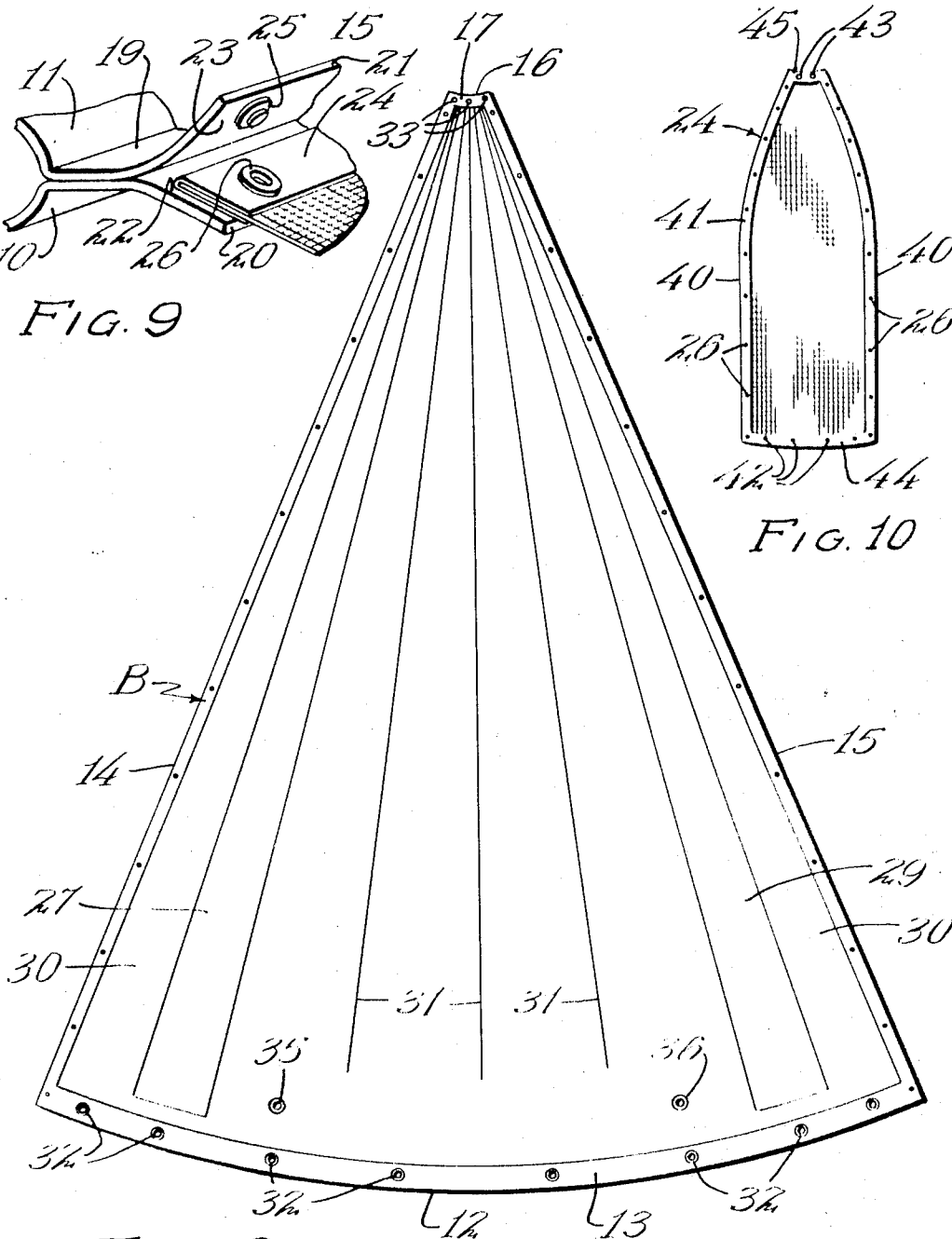


FIG. 8

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INFLATABLE AIR TENT

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10 Claims

ABSTRACT OF THE DISCLOSURE

The invention relates to an inflatable tent made of a series of sector-shaped or wedge-shaped sections of generally triangular form, two edges converging substantially to a point and the third side being convexly arcuate. The sections are formed of two plies of air tight material marginally sealed together. The plies are also sealed together along spaced diverging lines extending from the point of the sections at which the converging sides join to terminal points spaced from the sealed curved edge thereof. The sections are arranged with the converging edges overlapping. The interiors of the sections are connected by tubes. When inflated, the tent walls extend upwardly and curve inwardly to form a dome. Expansion of the top and bottom of the sections is restricted by lacings.

This invention relates to an improvement in inflatable tent, and deals particularly with a tent which may be used for camping or any other suitable purpose.

Various types of inflatable structures have been produced. For the most part, these previous devices have been produced in the form of a continuous arch having closure means at at least one end thereof, and usually having some means of connecting opposite sides of the arch to hold the structure in proper position. While structures of this type are suitable to provide sleeping accommodations similar to a pup tent or the like, they usually do not accommodate a person in an upright position. Furthermore, the size of tents of this type is fixed and the tents are made to a predetermined size and shape.

There are various advantages of having a tent which is of dome-shaped construction. A tent of this type is capable of deflecting a higher wind velocity than the tents having flat surfaces. By making the tent of proper size, it can be made to readily accommodate a person in a standing position if it is so desired. Furthermore, tents of this type are more readily adaptable to ventilation. By providing an opening of the proper size at the top of the tent, a fire or other means of supplying heat may be safely used within the tent, the fumes being free to escape through the top opening.

There is also an advantage in providing a tent of the type described which is adjustable in size. I have found that by making the tent in a number of sections, the diameter of the structure may be readily increased so that the tent is capable of holding a predetermined number of people. Making the tent in a series of sections also provides the advantage that a door opening may be provided at any point about the circumference of the tent by merely disconnecting the fastening means which hold the adjoining sections together. Making the tent in a series of separable sections also has the advantage that in the event one section is accidentally perforated, this section may be removed and either replaced by another section, or the diameter of the tent may be reduced to compensate for the missing section. Having the tent in sections also simplifies the task of providing window space in warm weather. By leaving two sections spaced apart, and adding a similar non-inflatable section of netting or other such material, a screen opening may be readily provided. Furthermore, if desired, certain of the sections may be

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provided with screened openings or the like in the event the tent is to be used in warm weather.

A further feature of the present invention resides in the provision of a tent formed of a series of sections which are generally wedge shaped in form being relatively wide at their lower ends, and tapering to substantially a point at their upper ends. The sections are formed of two thicknesses of rubber or other resilient material which are sealed together about their entire periphery. The plies of material are also sealed together along tapering lines which are relatively wide apart at the lower ends of the sections, and which are relatively close together at the narrow upper ends thereof. The lines of attachment terminate in spaced relation to the sealed lower ends of the sections so as to provide a continuous annular passage about the bottom of the tent. Means are provided for connecting the upper ends of the sections so that these ends come together, to form a closure or are spaced apart so that the tops of the sections define a ventilating opening at the top of the tent. Means are also provided for connecting the lower ends of the sections together, this means usually comprising a cord or similar fastening means extending through the sealed lower edges of the sections and preventing them from moving outwardly. Alternatively, the sealed lower edges of the sections may be secured to the marginal edge of a circular disk forming a floor if it is so desired.

A further feature of the present invention resides in the manner in which the tent is inflated. Each section is connected to an adjoining section by a hollow conduit which connects a pair of self sealing valves which are sealed to the sections, such tubes being provided about the entire periphery of the tent so that all of the sections may be connected together. As a result, when air under pressure is introduced through one of the valves, this air may flow from one section to another, uniformly inflating the tent to its completed form.

A further feature of the present invention resides in the provision of a novel means of holding two of the sections together so that they may be readily separated. If desired, the tapered edges of the sections may be provided with inflated ribs which are spaced from the next adjacent rib by a flat area through which the plies of the sections are sealed together. The space between the marginal edge and the next adjoining rib of each section may thereby form a pocket designed to accommodate the marginal edge of the next adjoining section. In this way, the two sections may be overlapped to provide a closure. At the same time, the two sections may be readily spread apart to provide a door opening.

These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of the specification:

FIGURE 1 is a perspective view of the sectional tent showing the general arrangement thereof.

FIGURE 2 is a horizontal sectional view through a section of the tent, the section being shown through a single inflated tent section.

FIGURE 3 is a vertical sectional view through the lower end of one of the tent sections, showing the transverse passage at the base of each section through which air is communicated to the individual ribs of the section.

FIGURE 4 is an enlarged section through one of the fittings provided for connecting the interior of one section to the interior of the next, to permit the ready inflation thereof.

FIGURE 5 is a top plan view of the assembled tent, before inflation, the tent illustrated being formed of eight similar sections.

FIGURE 6 is a sectional detail showing an air valve communicating with the interior of the tent and through which the tent may be filled with air.

FIGURE 7 is a vertical sectional view through the sealed lower ends of a pair of overlapping sections and showing the cord or lace for tying the sections together.

FIGURE 8 is a diagrammatic plan view of one of the sections in flat form.

FIGURE 9 is an exploded view showing snap fasteners for holding the adjoining sections together.

FIGURE 10 is a diagrammatic view of a foraminous panel to take place of one of the inflatable panels.

The tent A is formed of a series of inflatable sections, the sections being indicated in general by the letter B. Obviously, the sections may vary to some extent in shape, depending upon the desired shape of the finished tent. However, the sections are generally wedge-shaped or triangular in form having a relatively wide lower peripheral end, and a very narrow upper end.

Each of the sections B is formed of at least two plies of resilient sheeting, the outer ply being indicated by the numeral 10 in FIGURES 2 and 3 of the drawings, and the inner ply being indicated by the numeral 11. As is indicated in FIGURE 8 of the drawings, the two plies are of generally triangular form, and are sealed together along the lower arcuate edge 12 to form a flat flange 13. The side edges 14 and 15 are also sealed together, and the short arcuate upper edge 16 is also sealed to form a top flat flange 17. In preferred form, and as indicated in FIGURE 9 of the drawings, the side edges 14 and 15 are sealed together along an area 19 which is spaced from the marginal edges 20 and 21 of the plies 10 and 11. As a result this forms separate flaps 22 and 23 between which may be sandwiched a panel 24 of gauze or screen material to form a foraminous ventilating means. Snap fasteners 25 may be provided in the inner flaps 23 with cooperable snap fastener means 26 on the edges of the panel 24 which are engageable therewith. When a full height opening is desired, the screen panels may be shaped properly to fit the space between the inflated sections.

The plies 10 and 11 are sealed together along generally triangular areas 27 and 29 which are spaced from the sealed areas 19 of the ply edges to provide an inflatable rib 30 between the sealed areas 27 and 29 and the adjacent edges 14 and 15. The plies are also sealed together along upwardly converging lines 31 which extend to the seal top 17, but which terminate in spaced relation to the sealed lower edge 13. The sealed areas 27 and 29 also terminate above the sealed flange 13.

Grommets 32 extend through the sealed arcuate flange 13 of each section, and similar grommets 33 extend through the sealed top flange 17. The grommets 32 and 33 are designed to accommodate lacing lines such as 34 indicated in FIGURE 7 of the drawings. With sections of the type illustrated, it would seem that the tent, when inflated, would be conical in form. However, it will be noted that the space between the lines of sealing 31 are considerably farther apart near the lower edge of each section than at the upper end thereof. As a result, when the sections are inflated, the area between the lines of sealing are inflated to a much greater extent than at the upper ends of the sections. As a result, when the lacings 34 are drawn up so that the diameter of the marginal edge is of considerably smaller circumference than when the sections are laid flat, the tent forms a dome-shaped structure similar to that illustrated in FIGURE 1 of the drawings.

Each of the sections B is provided with an air tube 35 near the lower end thereof spaced from the edge 14 of the section, and a second air tube 36 at approximately the same distance from the lower arcuate edge 12 of the section and spaced from the side edge 15. These air tubes may be self-sealing valves or may be of any desired form. As is indicated in FIGURES 1 and 4 of the drawings, the air tube 35 of one section is connected to the air tube 36 of the adjoining section by a flexible air communicating tube 37. The air tube 37 may be left off the sections which are to form the door openings, and

these terminal air tubes may be capped or otherwise held closed as indicated at 39 in FIGURE 6 of the drawings.

The sections B are assembled together in the manner best illustrated in FIGURE 5 of the drawings. The side edges 14 and 15 of adjoining sections are overlapped in the manner illustrated so that the marginal rib 30 between the sealed area 29 and the sealed edge 15 overlies the sealed area 27 of the next adjoining section. When arranged in the relationship illustrated in FIGURE 5 of the drawings, the lacings 34 are inserted through the grommets, the marginal grommets of one section being aligned with the marginal grommets of the adjoining section as indicated in FIGURE 7. A lace is also inserted through the grommets 33 at the upper ends of the sections, and this lacing is either allowed to be of sufficient length to provide a ventilation opening at the top of the tent, or the ends of the sections may be drawn together to form a closure. The lacings 34 are tightened until the diameter of the lower ends of the sections is materially less than in FIGURE 5 of the drawings. Air is then introduced to one of the air tubes 35 or 36, usually one of the terminal air tubes which has remained unconnected by the connecting tube 37. The air flows from one section to another throughout the entire group of sections, passing from one section to the other through the connecting tubes 37. As the tent is inflated, it tends to assume the form illustrated in FIGURE 1 of the drawings, the lower portions of the walls being substantially vertical and then curving inwardly to form a dome.

By leaving the lacings 34 free of connection with the section which is to form the door, this one section may be swung inwardly or outwardly to gain access to the interior of the tent. When the door is closed, the marginal ribs 30 of the two sections overlap in the manner illustrated in FIGURE 2 of the drawings. Also, due to the fact that the lower ends of the sections are not uninterrupted by the sealing seams 27, 29 and 31, the lower edge of the tent forms an inflated rib extending about the bottom of the sections. The marginal lower edges of the sections normally fold inwardly along the surface of the ground as indicated in FIGURE 3 of the drawings.

The foraminous panel 24 is diagrammatically shown in FIGURE 10. This panel is shaped similarly to the outline shape of the sections B after they are inflated. The lower portions 40 of the panel sides are substantially parallel, as the taper of the ribs between the sealed areas 31 draw the triangular sides of the sections B together more at the bottom of the sections than toward the top. The snap fastener portions 26 preferably extend through binding tapes 41 encircling the panel. Grommets 42 and 43, similar to the grommets 32 and 33, may be provided at the lower and upper edges 44 and 45 of the panel 24, to accommodate the lacings.

In accordance with patent office statutes, I have described the principles of construction and operation of my improvement in inflatable tent, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that changes may be made within the scope of the following claims without departing from the spirit of my invention.

1. An inflatable tent including:

a series of generally wedge-shaped sections having a narrow upper end, a generally arcuate wide base end, and sides which diverge from a narrow upper end to the wide base end,

each section including a pair of contiguous plies of air tight flexible material marginally sealed to provide a sealed upper end, a sealed base end and sealed side edges,

the sections including a plurality of sealed areas arranged in lines extending from the narrow upper end in diverging relation to a point spaced from the base end thereof,

means connecting the sealed base ends of the section together in arcuate relation,

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means connecting, the upper ends of the sections together,

relatively wide sealed areas between the plies in spaced relation to both side edges of said sections, these relatively wide sealed areas forming pockets to accommodate the inflated areas of the next adjoining sections to hold the side edges of the sections in overlapped relation, and

means by which the interior of said sections may be inflated to provide a dome-shaped structure.

2. The structure of claim 1 and including connecting means connecting the space between the plies of the various connections for transmission of fluid from one section to the other.

3. The structure of claim 1 and including air tubes connecting the interiors of adjoining sections together and through which air may flow from one section to another.

4. The structure of claim 1 and in which said sections are substantially triangular in outline before they are inflated.

5. The structure of claim 1 and in which the means connecting the sealed base ends of the sections comprises flexible laces.

6. The structure of claim 1 and in which said sealed base ends are provided with spaced grommets adapted to accommodate laces which provide the means for connecting the sealed base ends of sections together.

7. The structure of claim 1 and in which the sealed marginal edges of said sections are provided with vertically spaced snap fastener members adapted to cooperate with snap fastener members on the edges of a flexible foraminous section inserted between a pair of said inflatable sections.

8. The structure of claim 1 and in which the plies of the sealed side edges of the section are unattached outwardly of the marginal seal, and including snap fastener members in spaced relation on one of said plies.

9. An inflated tent including:

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a series of generally wedge-shaped sections having a narrow upper end, a generally arcuate wide base end, and sides which diverge from the narrow upper end to the wide base end,

each section including a pair of contiguous plies of air tight flexible material marginally sealed to provide a sealed upper end, a sealed base end and sealed side edges.

the sections including a plurality of sealed areas arranged in lines extending from the narrow upper end in diverging relation to a point spaced from the base end thereof,

means connecting the sealed base ends of the section together in arcuate relation,

means connecting the upper ends of the sections together,

detachable means connecting the interior of one section to the interior of the next, and

means by which the interior of said sections may be inflated to provide a dome-shaped structure.

10. The structure of claim 9 and including means holding the side edges of said sections in overlapping relation.

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