

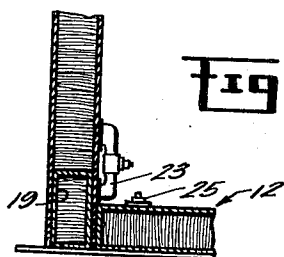
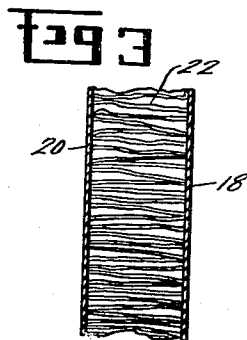
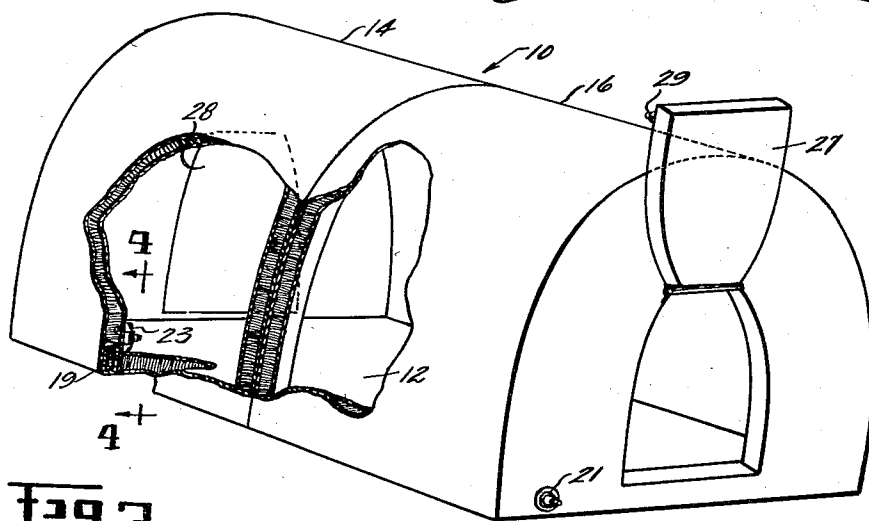
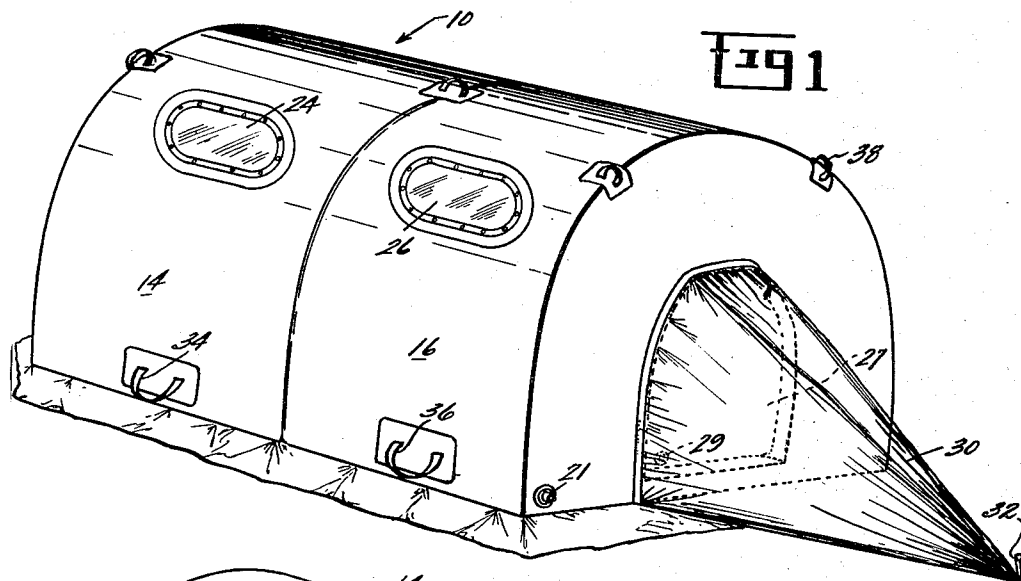
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2,819,724

INFLATABLE TENT

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2,819,724

INFLATABLE TENT

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(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without payment to me of any royalty thereon.

This invention relates to a pneumatic shelter and in particular to a tent wherein the tent is of double walled construction and the wall and floor is capable of being inflated.

Semi-rigid portable shelters have been developed in the past but they are generally heavy, bulky, and constructed of aluminum or plywood and they have also used insulating materials such as fiber glass, rock wool, cork and balsa. A need for an emergency shelter for use in the Arctic regions was recognized by the inventor. By the use of new materials and techniques he has constructed a light weight, easily inflatable, emergency shelter.

It is therefore an object of this invention to provide a pneumatic shelter of double wall construction which requires no internal bracing, offers good insulation, can be heated easily and which offers a minimum resistance to the wind.

It is a further object of this invention to provide an emergency shelter which is simple to erect and is of light weight and can be folded into a compact bundle for air transport.

It is a still further object of this invention to provide a pneumatic shelter which is of sufficient height to permit reasonable camp movement therein and enables the occupants to stand while dressing or undressing.

It is a further object of this invention to provide a pneumatic shelter which is international orange in color on the outside for visibility to aid search and rescue aircraft in the location of the survivors.

It is a further object to provide an emergency shelter which is flaked with aluminum on the inside to reflect the heat from a stove and for reducing the heat loss due to radiation.

Another further object of this invention is to provide a pneumatic shelter which utilizes the air between the double walls for insulation and support purposes.

These and other objects will become more apparent when read in the light of the accompanying drawings and specification wherein similar parts have like numbers and wherein:

Fig. 1 is a view showing the general outside construction of the tent.

Fig. 2 is a cut away view showing the individual segments and floor of the tent in assembled relation.

Fig. 3 is a cross sectional view of one of the segments showing the construction of the double wall of the tent.

Fig. 4 is a cross sectional view showing the manifold and valve connection.

Referring to the drawings, 10 generally designates a pneumatic shelter used for emergency purposes in the Arctic region. The shelter is comprised of a floor 12, and segments 14 and 16 which are generally easily foldable and occupy a small amount of space when not inflated.

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Although two segments are shown, the tent may comprise many segments. Each segment and floor is comprised of a double wall construction having fabric layers 18 and 20 as shown in Fig. 3. The fabric layers are held together in spaced relation when inflated, by a number of cross-threads 22 at right angles to the fabric which are woven into the fabric as the layers are woven. The number of threads per square inch and their length can be controlled. Edges of the floor and each of the sides of the segments are adapted to be joined by cementing the segments and the floor together and then covering the outside areas and edges by an airtight process to form a sealed tent. The floor and each segment by virtue of its double wall construction form individual air bags. The walls of the segments, floor, and doors are inflated separately in the preferred embodiment of the invention. However, the inflation of the segments, floors and doors can be performed from a single source at the same time instead of inflating them separately. The bottom of the wall or segments is provided with a main manifold 19 which is further provided with a main valve 21, which valve extends from both the inside and outside of the tent so that the erection of the tent can be completed either from within or outside of the tent. The manifold 19 is connected to the individual segments by jumper valves 23 so that the individual panels may be opened when inflated and individually locked off after the shelter is erected by closing their valves to the manifold. The walls of the tent are further provided with windows 24 and 26 and doors 27 and 28 which are inflatable and are hinged at the top so as to swing upwardly. A valve 25 is provided in the floor and a valve 29 is provided in the doors so as to inflate them separately. Surrounding the outside of each door is a permanently attached waterproof fabric tunnel 30. This tunnel is used for store space or as a door in the event the doors 27 and 28 do not operate properly. This fabric tunnel is made of loose cloth and is attached around the opening of the doorways at one end and is tied down at its other end to the ground by a peg 32 or the like as shown in Fig. 1. The tent is further provided with handles 34 and 36 for carrying the tent. Loops 38 are provided at the ends of the tent and centered for guide ropes (not shown) so as to tie down the tent in place to prevent a strong wind or the like from blowing the tent away. The floor, walls and doors of the shelter are coated with a low temperature coating compound for sealing the shelter, thereby making it airtight. The inside of the tent is flaked with aluminum to reflect the heat from the stove, thereby reducing the heat loss due to radiation. Generally the tent is carried about in a compact package and occupies a small amount of space. This enables the tent to be carried as standard equipment in aircraft in the event of an emergency, or it may be carried by parties going on a camping trip. In either event, when the occasion arises for its use, it is easily assembled by removing the tent from the package and inflating it. The inflation of the fabric layers 18 and 20 erects the shelter and serves to insulate and support it. The inflation can be accomplished with bottle gas such as CO₂ or the like. No framework is necessary to support this tent. As each of the segments or panels become filled to the desired amount of air pressure, each segment or panel is closed from the other panels. The series of panels prevents the shelter from collapsing in the event one of the panels should spring a leak. The tent is so designed so as to be of small resistance to the wind and weather elements as possible. When erected, the tent is sufficiently high to permit reasonable movement therein to enable the occupants to perform any duties necessary while in the tent. The tent is of an orange color in the event that the tent is used by personnel flying in an aircraft who have been forced down; so as to enable search parties to

locate the survivors. Further, the tent can be increased in size by additional segments to the central portion.

The inventor has provided a very simple construction for a pneumatic shelter which is easily transported by person or may be used as standard equipment in aircraft in the event of an emergency landing.

It is apparent the specific embodiment shown above has been given by way of illustration and not by way of limitation and that the structures above described are subject to wide variation and modification, as will be readily apparent therefrom to those versed in the art, without departing from the scope or intent of the invention, all of which variations and modifications are to be considered as equivalents and be included within the scope of the present invention as generally defined by the appended claims.

Whereby I claim:

1. A pneumatic device which is completely self sustaining within itself on inflation thereof to form a shelter comprising, a flexible outer wall, a flexible inner wall, thread elements woven into said inner wall and connected to and interwoven into said outer wall and constituting load members, means connecting said walls to form an airtight enclosure thereby, and inflation means connected therewith whereby on inflation thereof the device is self erecting to define a free standing shelter, whereupon the said load members become operative to resist deformation of said shelter by the elements to provide a shelter of uniform strength which is impervious to the elements.

2. The structure as set forth in claim 1, and the said inner wall being flaked with aluminum on the inner surface thereof to maintain the heat or temperature established within the shelter with a minimum of heat loss therefrom to provide maximum safety to the occupants thereof in the event of extremely cold weather.

3. A pneumatic device which is completely self sustaining within itself on inflation thereof to form a shelter comprising, segments of fabric in sealingly connected relation providing the floor and inner wall of said device on inflation, segments of fabric impervious to the elements in connected relation providing an outer wall, means connecting the inner wall and said outer wall at their perimeters to provide an airtight enclosure, threads interwoven into said inner and outer walls to form connections integral therewith and therebetween in a closely spaced continuous fashion, and inflating means connected into the space between said walls whereby on inflation thereof the device is completely self erecting and self sustaining, the integrally connected threads providing deformation resistant load members to the walls on inflation to provide a shelter uniformly self resistant to the elements and to loads thereon merely by the inflation thereof.

4. The structure as set forth in claim 3, and the said inner wall of fabric being flaked with aluminum on the inner surface thereof to maintain the temperature established within the shelter on inflation thereof with a minimum of heat loss therefrom to provide maximum safety to the occupants thereof in the event of extremely cold weather.

5. A pneumatic device which is completely self sustaining within itself on inflation thereof to form a shelter comprising, a floor section, a superstructure section, each of said sections consisting of an outer wall and an opposed inner wall and threads interwoven integrally with and connecting to the opposed walls in a closely spaced uniform manner, means connected to the extremities of said sections and forming an airtight connection therebetween, and inflating means connected to the respective sections whereby on inflation thereof the device is completely self erecting and self sustaining, the integral threads providing deformation resistant load members on inflation to effect a shelter uniformly resistant to the elements and the loads thereon merely by inflation thereof.

6. The structure as set forth in claim 5, and the said

inner wall being flaked with aluminum on the inner surface thereof to maintain the temperature established within the shelter on inflation thereof with a minimum of heat loss therefrom whereby to provide maximum safety to the occupants thereof in the event of extreme weather conditions.

7. A pneumatic device which is completely self sustaining within itself on inflation thereof to form a shelter comprising, a floor section, a plurality of superstructure sections associated therewith, each of said sections consisting of an outer wall and an opposed inner wall and threads interwoven integrally with and connecting to the opposing walls in a closely spaced uniform manner, means respectively connected to extremities of said sections to form an airtight connection therebetween, an inflating section connecting said superstructure sections to form an integral part thereof and having inflating means associated therewith, and means connected to said inflating section and selectively communicating with said superstructure sections including means operable to close a particular section off from said inflating section whereby on inflation said device provides a self erecting, self sustaining stable structure which is not materially affected by damage to a portion thereof.

8. The structure as set forth in claim 7, and the said inner walls being flaked with aluminum on the inner surface thereof to maintain the temperature established within the shelter on inflation thereof whereby to provide maximum protection to the occupants thereof in the event of extreme weather conditions.

9. A pneumatic device which is completely self sustaining within itself on inflation thereof to form a shelter comprising, a floor section, superstructure sections of curved contour interconnected in airtight fashion, each of said sections consisting of an outer wall and an opposed inner wall and threads interwoven integrally with and connecting the opposing walls, means connecting said floor section and associated superstructure sections, and an inflating means generally and selectively connected to said respective sections whereby on inflation of the sections the device is completely self erecting and self sustaining, the integral threads providing deformation resistant load members on inflation of the sections to provide a shelter uniformly self resistant to the elements and loads thereon.

10. A pneumatic device which is completely self sustaining within itself on inflation thereof to form a shelter comprising, a floor section, a superstructure section, each of said sections consisting of an outer wall and an opposed inner wall and threads interwoven integrally with and connecting the opposing walls in a uniform manner, means connecting said floor section and superstructure section in airtight relation, inflatable end closure panels providing a continuous enclosure and having access means therein, inflating means generally and selectively connected in said sections, said inner wall having the inner surface thereof flaked with aluminum, and hood closure elements connected about said access means whereby on inflation thereof the device is completely self erecting and self sustaining, the threads effecting a deformation and weather resistant shelter, the hood elements preventing a direct opening to the outer elements upon opening a closure element, and the aluminum flake insuring a minimum of heat exchange providing maximum protection to the occupants of the shelter.

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