May 26, 1964 C. W. MOSS 3,134,200

METHOD OF ERECTING SHELTERS

Filed June 27, 1962 4 Sheets-Sheet 1

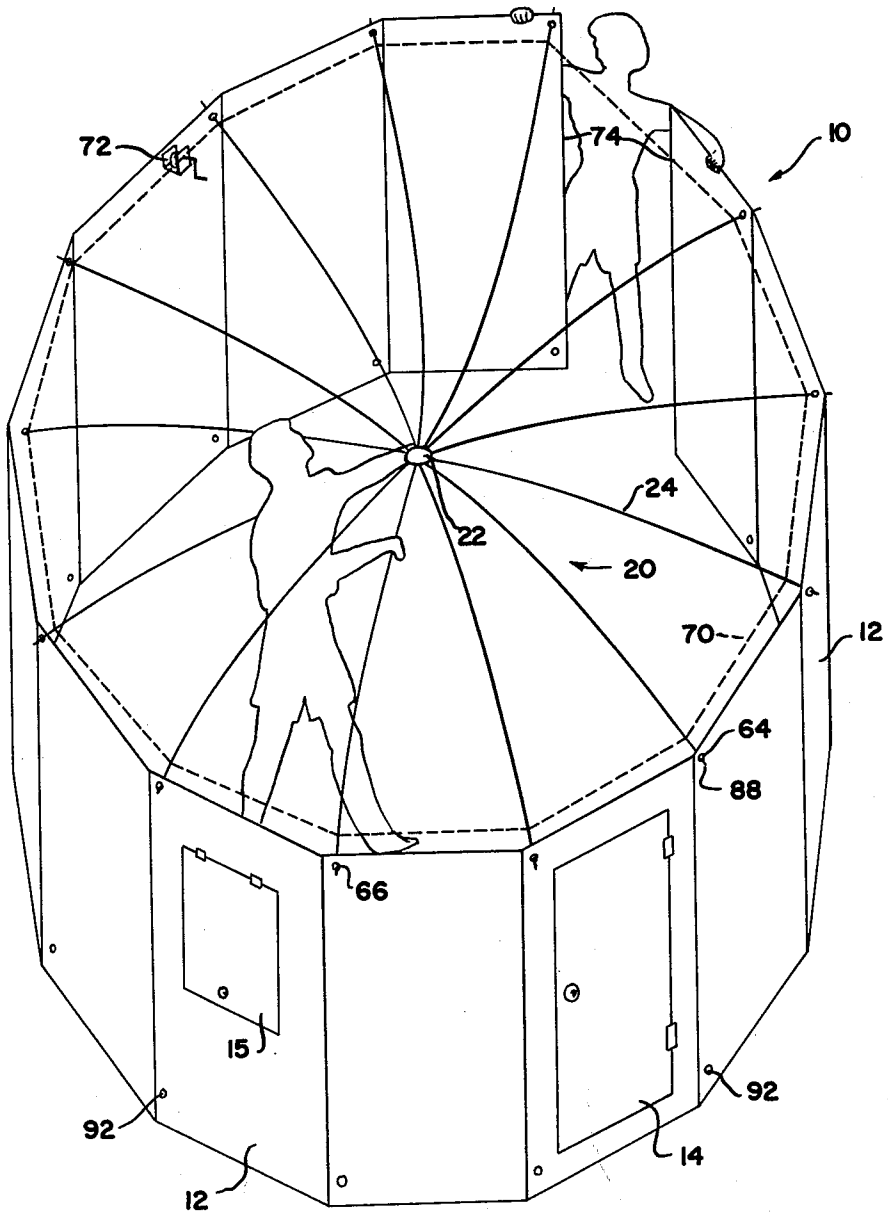


FIG. 1

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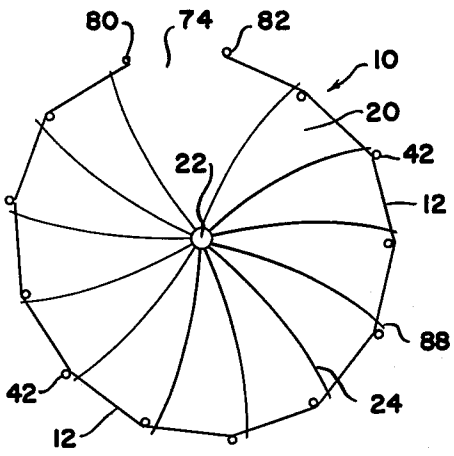


FIG. 2

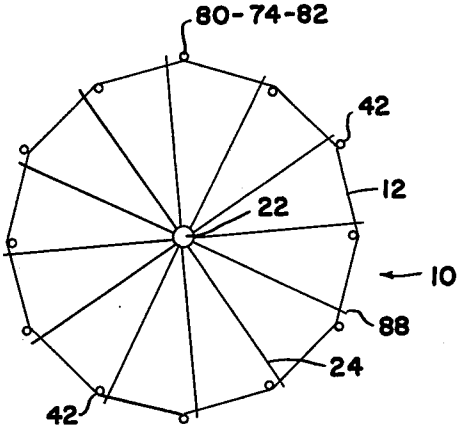


FIG. 3

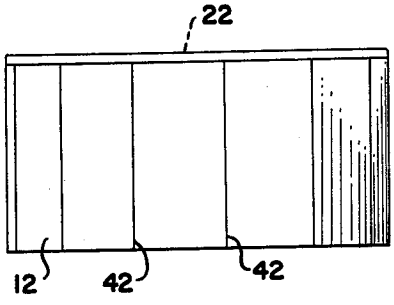


FIG. 4

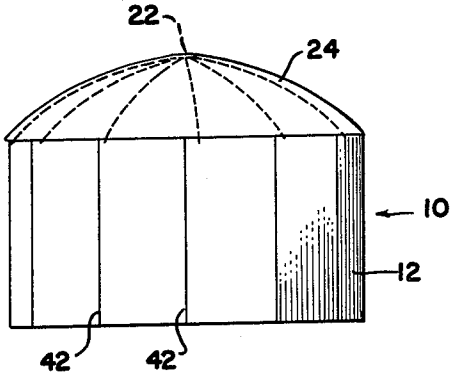


FIG. 5

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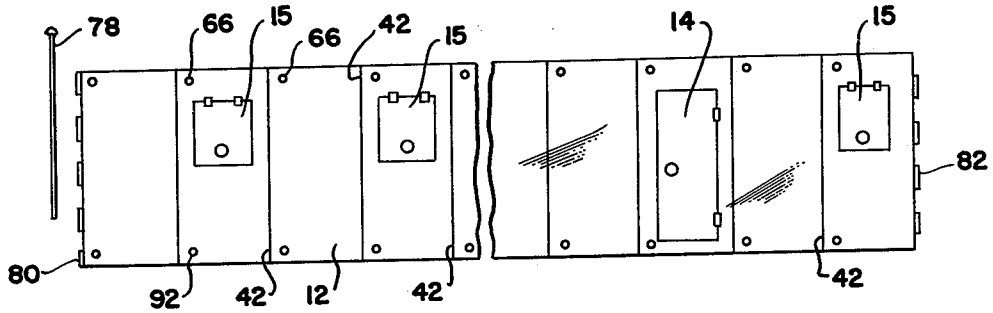


FIG. 6

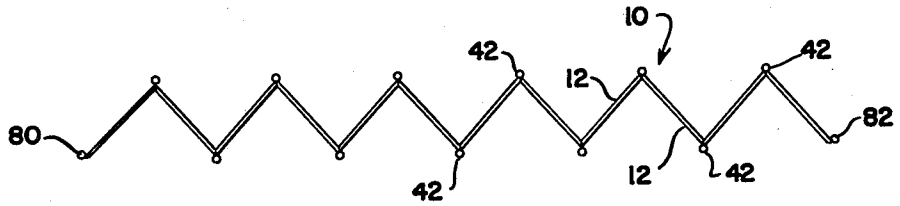


FIG. 7

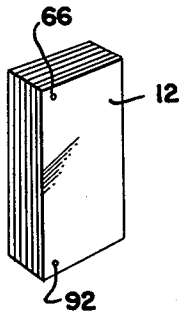


FIG. 8

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METHOD OF ERECTING SHELTERS

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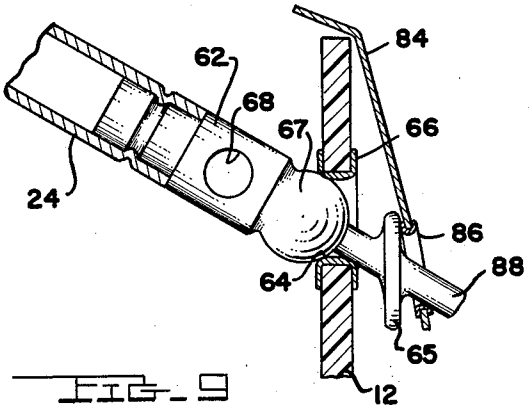


FIG. 9

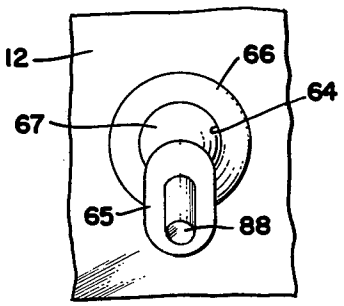


FIG. 11

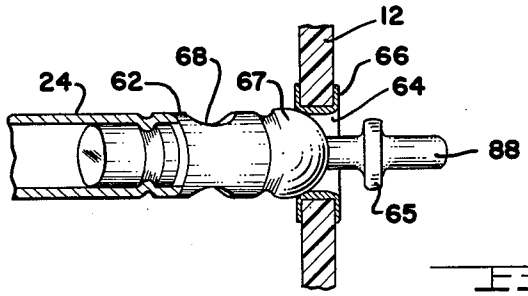


FIG. 10

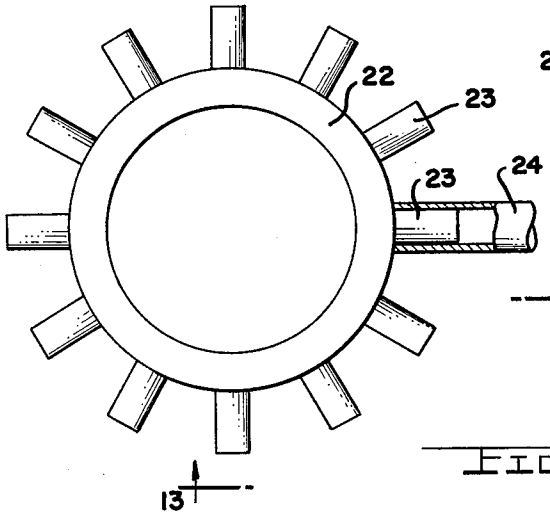


FIG. 12

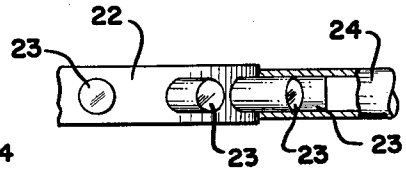


FIG. 13

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3,134,200

METHOD OF ERECTING SHELTERS

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Filed June 27, 1962, Ser. No. 205,697
10 Claims. (Cl. 50—534)

This application relates to shelters and discloses an easily erected shelter and a method of erecting same, an understanding of which can best be obtained by reference to the appended drawings.

In these drawings.

FIG. 1 is a diagram showing a step in erecting the shelter.

FIGS. 2–3 are diagrams comprising plan views of FIG. 1, but showing steps in erecting the shelter.

FIGS. 4–5 are elevation views corresponding to FIGS. 2–3.

FIG. 6 is a diagram of a wall member per se of the shelter made up of a large number of panels.

FIG. 7 is a diagram in transverse plan section, showing panels edge to edge, and hingedly connected together .

FIG. 8 diagrammatically shows the wall member folded when not in use.

FIGS. 9–11 are detailed views in side elevation, plan and end elevation showing the structural details of the end of a roof frame rib, and a socket in a panel, and a draw cord, all forming parts of the shelter.

FIG. 12 is a plan view of a hub part per se.

FIG. 13 is an elevation view as if on line **13—13**, FIG. 12.

The Shelter

The shelter comprises a wall member **10** formed of a large number of panels **12**, certain of which are formed complete with door **14**, windows **15**, and screens. It also includes a roof frame **20**, comprising a hub **22**, and a number of roof ribs **24**, each approximately the length of the radius of the completed shelter, and each cooperating with a panel of the wall member. The shelter also includes a draw cord **70**, and a crank **72**, for gradually winding up such cord. The shelter also includes a translucent cover or roof **84**, of a suitable fabric or plastic sheet material.

The Wall Member

The wall member **10** comprises a plurality of hingedly connected panels **12** (FIG. 1). When not in use, it is an accordion folded wall package (FIG. 8).

When in use, it is a single unitary preassembled rectangular wall member (FIG. 6) and is formed of a plurality of human high habitable high narrow wall panels **12**, arranged edge to edge and interjoined movably, as for example by separable hinges shown diagrammatically at **42**, alternately on opposite sides of the wall member, as shown.

However, the panels all may be integral parts of a large panel with the hinge connections formed by score lines.

The wall member is of a width equal to the height of the shelter, and is of a length approximately equal to the circumference of the shelter.

An early step in erecting the shelter is to erect the wall member into an almost complete polygonal, arcuate wall by standing it on a length edge, transverse to the panel edges, with the wall member vertical end edges being adjacent, but somewhat separated (FIGS. 1–2).

The Roof Frame

The roof frame **20** comprises a hub **22** having spokes **23** which separably joins and interconnects at their inner ends a plurality of radially arranged aluminum, tubular roof ribs or struts **24** each of a length equal to the radius

of the completed shelter. Each tube at its inner end fits over an outwardly projecting radial spoke of the hub. Each tube has its outer end separably connected to a panel, utilizing a structural arrangement shown best in FIG. 9 which shows a tube **24**, having an end part **62** cooperatively seated in a panel socket **64**, provided by a grommet **66** and separably interlocked to the panel by shoulders **65** and **67**. Each part **62** has an aperture **68** for a draw cord **70**, encircling and located inside the shelter, with the ends of the draw cord being connected to a wind-up crank **72**, shown in FIG. 1, and the draw cord threaded through all the ribs.

Method

Early steps in constructing the shelter are to form the wall member according to the foregoing, and to erect such wall member into an almost complete polygonal, arcuate wall with a gap at **74**.

A next step is to construct and erect a roof frame **20**, inside the wall member and at its upper part by interjoining the roof struts or ribs **24**, by the hub **22**, and seating the rib end parts **62** in the outer ends of the ribs and thus seating the ribs in the sockets **64** of the panels **12** to interlock the ribs and the panels and form the roof frame.

A next step in constructing the shelter is gradually to draw together the separated vertical ends of the wall member as shown in FIG. 1 to close the gap **74** between them and to complete the wall member into a closed polygon. This causes the wall member gradually to contract, and also causes the thus contracting wall member gradually to bow the roof frame ribs **24**, upwardly into a raised center dome whose ribs thrust outwardly on the wall member.

A next step in constructing the shelter is to lock and hold the wall member in its thus contracted closed position, and this is done by utilizing a long hinge pin **78**, to connect the parts **80–82** of the separable piano type hinge which connects the two end panels of the wall member when these panels are brought together by closing gap **74**.

The gradual drawing together of the separated vertical ends of the wall member to close the gap between them is accomplished by the use of the draw cord **70**, and its wind-up crank **72**. As the wind-up crank is used to wind up and draw the draw cord which is threaded through all the rib parts **62–68** at their outer ends, but inside the wall member, the draw cord and the wall member gradually contract to close the gap between the ends of the wall member after which the now closely connected ends of the wall member are locked together by the locking pin of the separable piano hinge which connects these ends.

As a preliminary step, it may be and usually is desirable to assemble and erect the roof frame in flat condition inside the wall member, and preliminarily to dome the roof frame between the time it is erected flat inside the wall member, and the time it is finally domed by the contracting of the wall member which in contracting bows the roof frame ribs and domes the roof frame. The premliminary doming of the roof frame may be accomplished simply by pushing up the hub manually by pressure applied under it, and at the center of the shelter where the ribs are interconnected at their inner ends.

Where as is desirable and is often the case, a roof **84** (FIG. 9) is provided and used, such roof, which is a circular sheet of flexible material, is laid and pulled over the roof frame and the lower edge of the roof is drawn over and down on the side of the erected wall member. Using eyelets or grommets **86**, at the lower edge of the roof, such lower edge is then secured firmly in place with the grommets secured over the end tips **88** of the roof rib parts **62**, which protrude through the wall member.

A later step is often and desirably utilized, namely staking the lower edge of the wall member at various points to the supporting base or ground on which the shelter is erected, using grommets 92 in the panels for this purpose.

It will be observed that the domed roof frame which is finally domed by the gradual contracting of the wall member and the gradual closing of the gap between its ends exerts outward thrust on the wall member and such thrust is resisted by the wall member whose ends are locked together by the locking pin 78. Roof sheet 84 also assists in holding the wall member and the roof frame in rigid condition.

In disassembling the shelter, the foregoing steps are adopted in reverse. The roof is removed, the locking pin 78 is removed, the wall member is expanded slightly, the roof frame is removed, lowered and disassembled, and the wall member is accordion folded back into its folded package form (FIG. 8).

This application is a continuation in part of my two prior applications, namely Serial No. 820,023, of June 12, 1959, now abandoned, and Serial No. 88,528, of February 10, 1961, now Patent No. 3,118,186.

Now, having described the method herein disclosed, reference should be had to the claims which follow.

I claim:

1. A method for constructing a human high, habitable shelter comprising:

(*a*) forming a single, unitary, preassembled, rectangular wall member of a plurality of human high narrow wall panels edge to edge with the panels interjoined movably on their adjacent edges, the wall member being of a width equal to the height of the shelter, and being of a length equal to the circumference of the shelter;

(*b*) erecting such wall member into an almost complete polygonal arcuate wall by standing it on a length edge transverse to the panel edges, with the wall member vertical end edges being adjacent, but somewhat separated;

(*c*) erecting a roof frame inside the wall member and at its upper part, said roof frame comprising an assembly of movable bowable radial ribs interconnected at their inner ends, and having their outer ends seated in sockets of the upper parts of the panels, one rib per panel;

(*c'*) preliminarily doming said roof frame upwardly and slightly;

(*d*) gradually drawing together the separated vertical ends of the wall member gradually to close the gap between them and complete the wall member into a closed polygon, and to cause the thus contracting wall member gradually to bow the roof frame ribs further upwardly into a more raised center dome whose ribs thrust outwardly on the wall; and

(*e*) locking and holding the wall member ends together to hold the wall member in its thus contracted closed condition, and thus locking and holding the roof frame in its domed, bowed rib condition.

2. A method according to claim 1 wherein the panels forming the wall member are initially separate and independent and where the step of forming the wall member comprises hingedly connecting the panels edge to edge by separable hinges.

3. A method according to claim 1 wherein the roof frame is flat when first erected inside the wall member and is finally domed by the contracting and closing of the wall member.

4. A method according to claim 1 wherein the roof frame is preliminarily domed by being pushed up manually by pressure applied at its center where the ribs are interconnected at their inner ends.

5. A method according to claim 1 including a later step of laying a roof sheet over the roof frame and securing the outer and lower edge of such sheet over the upper part of the wall member.

6. A method according to claim 5 including fastening the edge of the roof sheet to the wall member panels at spaced points around the wall member.

7. A method according to claim 5 including fastening the edge of the roof sheet to the wall member panels at spaced points around the wall member, and hooking them over the outer ends of the roof frame ribs protruding through the panels.

8. A method according to claim 1 including the use of a draw cord connecting the outer ends of the ribs at the wall member as a means for gradually contracting the wall member.

9. A method according to claim 1 including the use of a draw cord connecting the outer ends of the ribs at the wall member as a means for gradually contracting the wall member, such draw cord being inside the wall member.

10. A method according to claim 1 including the use of a draw cord connecting the outer ends of the ribs at the wall member as a means for gradually contracting the wall member, such draw cord being inside the wall member, with such ribs protruding the panels and having shoulders on the inside and outside of the panels.

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