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Glover

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[45] **Oct. 9, 1973**

[54] FOLDABLE CAMP SHELTER

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[21] Appl. No.: **248,217**

[52] **U.S. Cl.** ..... **52/68,** 52/69, 52/71, 135/1 A, 135/4 A

[51] **Int. Cl.** **A45f 1/06,** E04b 1/347

[58] **Field of Search** ..... 52/64, 66, 68, 69, 52/70, 71; 135/1 A, 4 A; 296/23 A, 23 D, 23 E, 23 F, 23 G, 23 MC

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Primary Examiner—Frank L. Abbott
Assistant Examiner—Leslie A. Braun
Attorney—Greek Wells et al.

[57] **ABSTRACT**

The shelter assembly is stored for travel within a rigid-walled container body integrated into the shelter when the unit is extended. It includes a multi-section floor hinged to the lower portion of the container body, the sections being connected for extension as a rigid floor supported in a horizontal plane at an elevation above ground level. Foldable roof braces at each side of the erected shelter connect the floor and container cover. Flexible shelter walls extend between the container body, cover, and floor to provide sleeping space for persons using the shelter. The assembly is designed for semi-automatic extension and is readily available while mounted at the rear of a vehicle.

5 Claims, 13 Drawing Figures

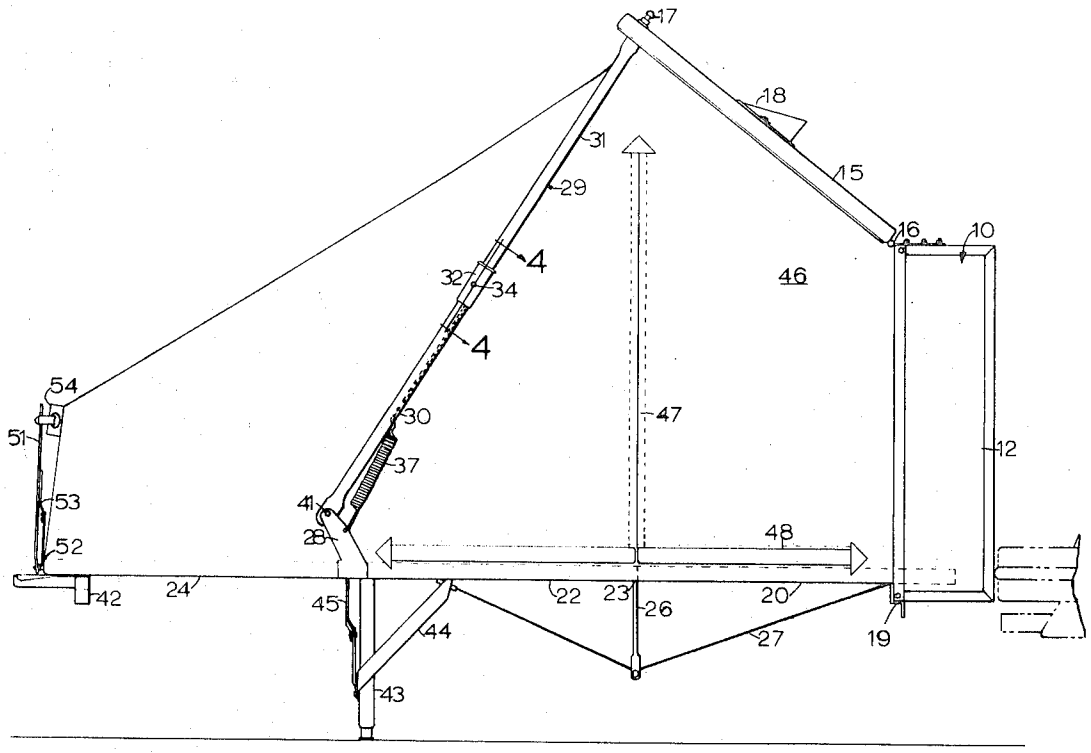

FIG 1

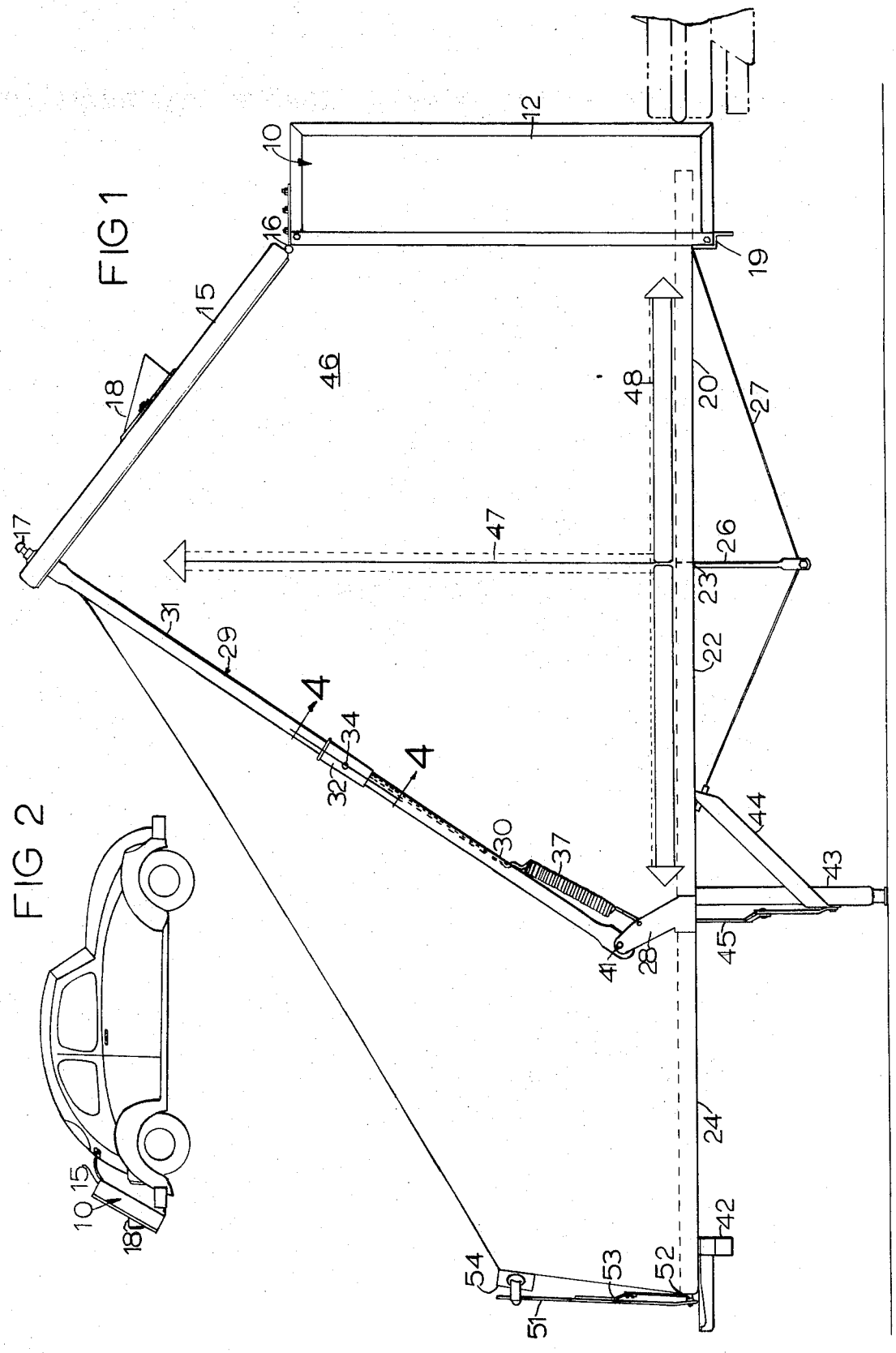
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FIG 2

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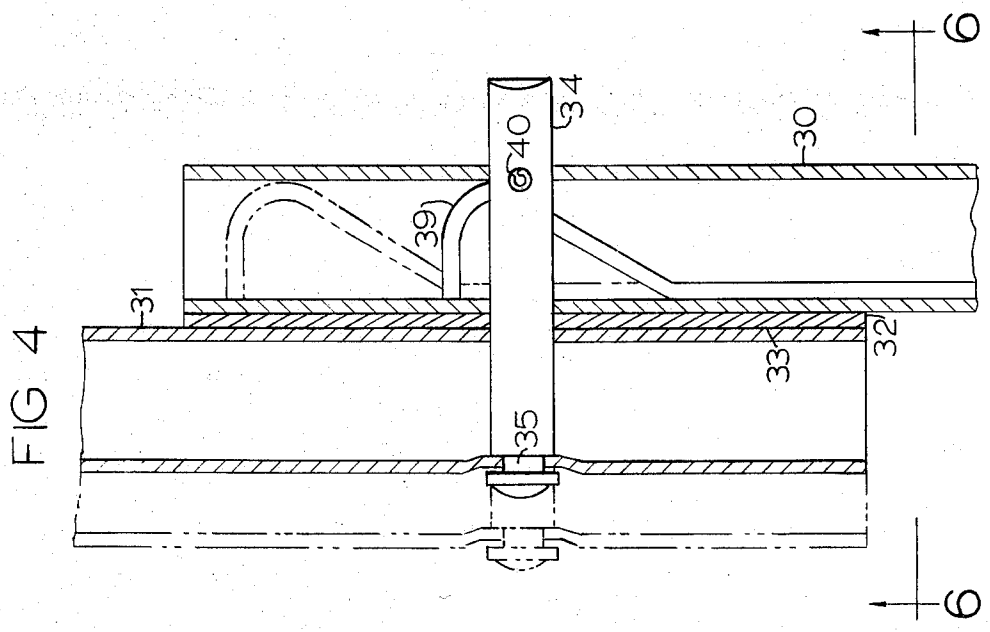
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FIG 4

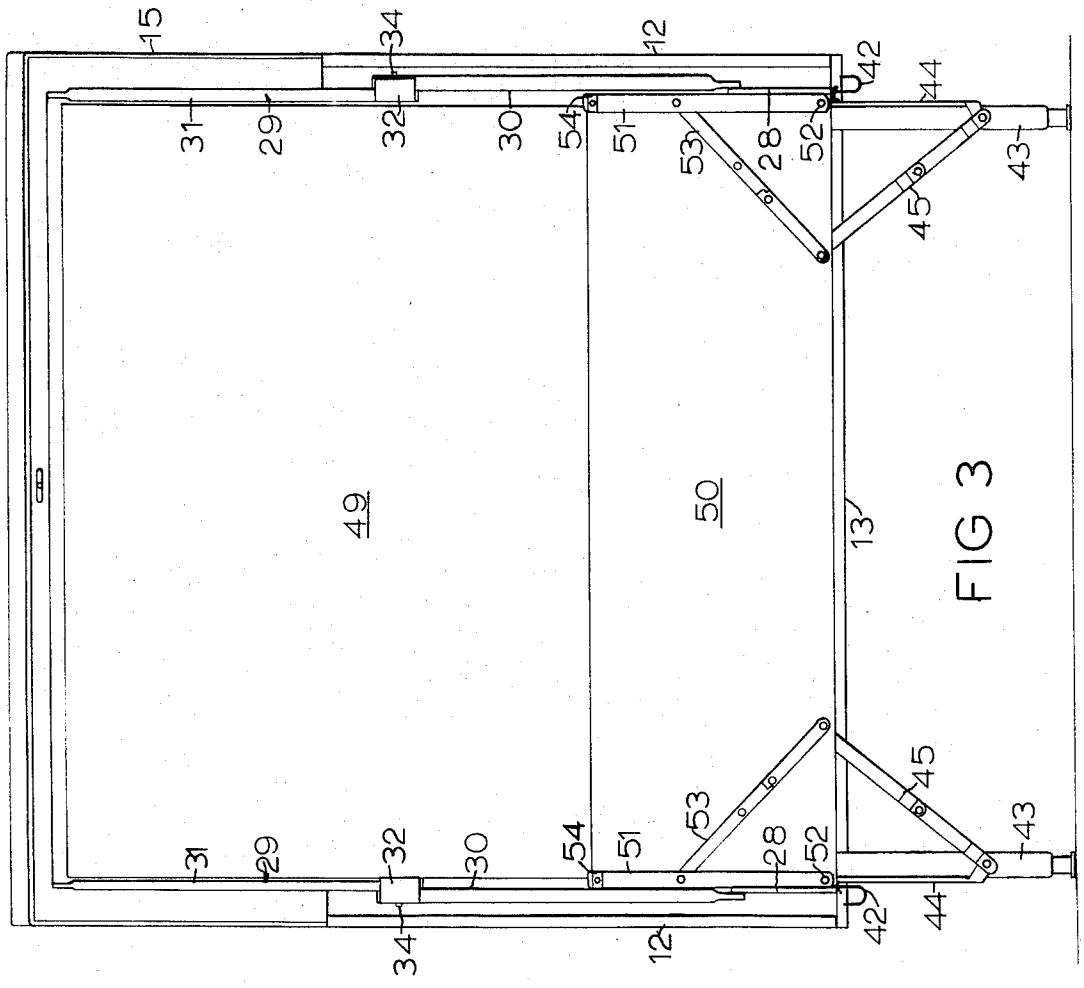
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FIG 3

FIG 6

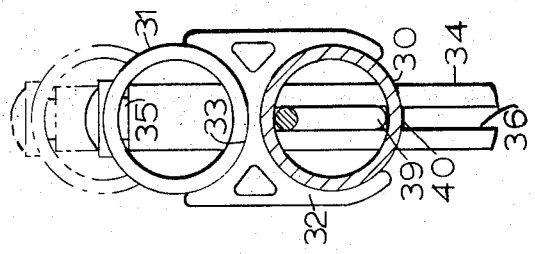
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FIG 5

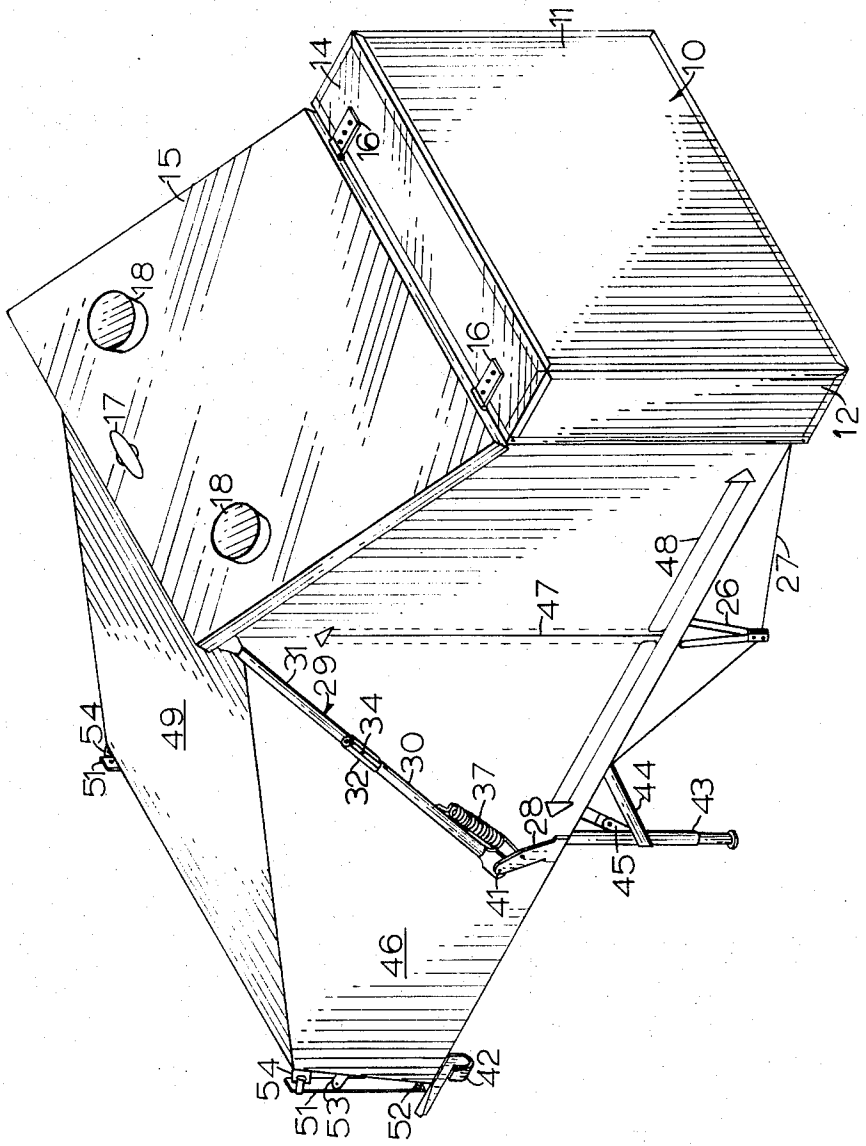
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FIG 7

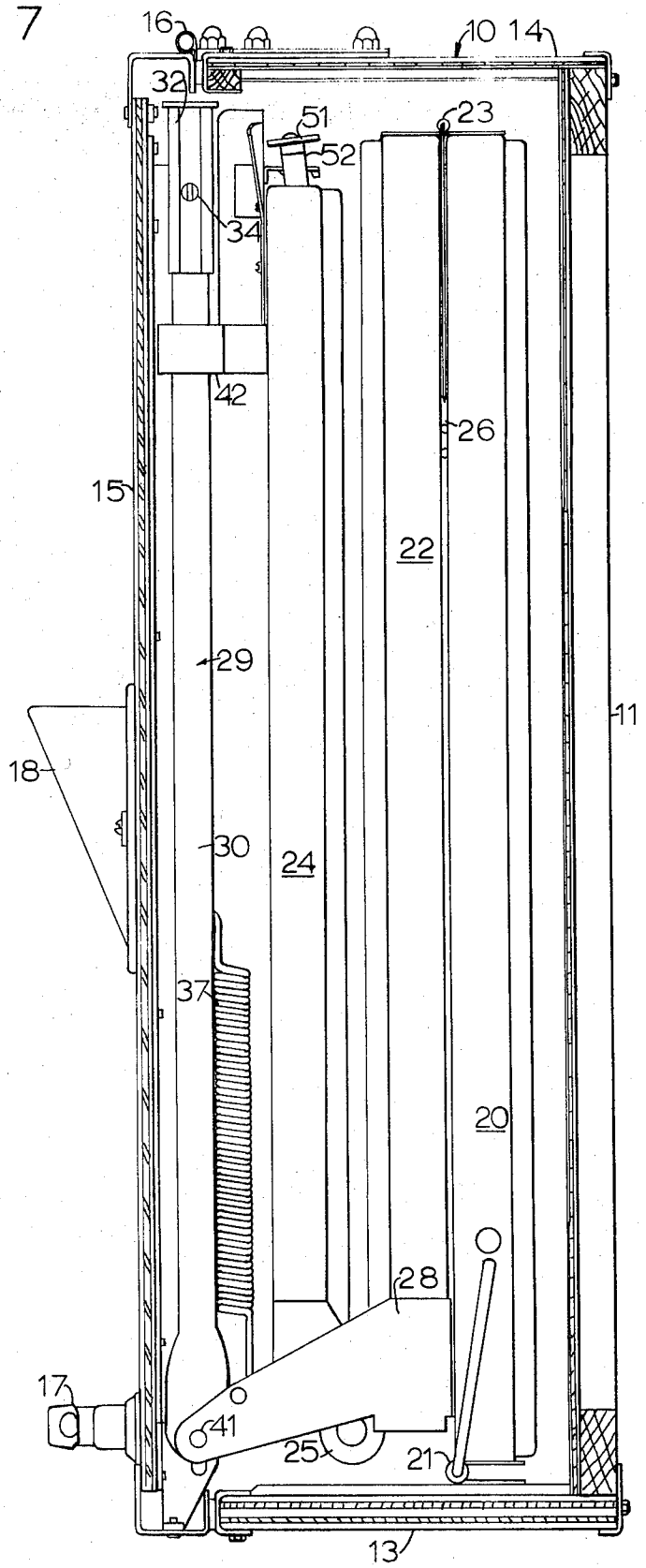
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FIG 8

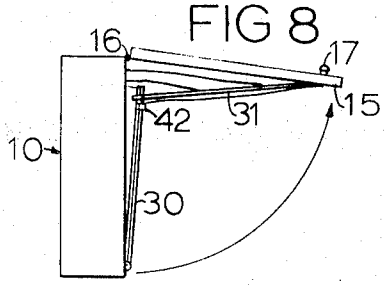


FIG 9

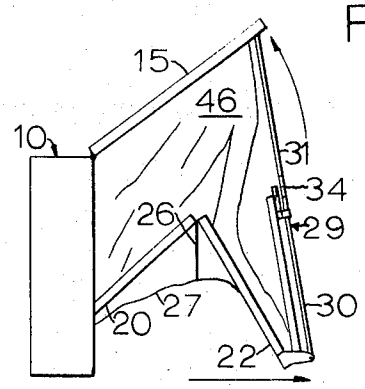


FIG 10

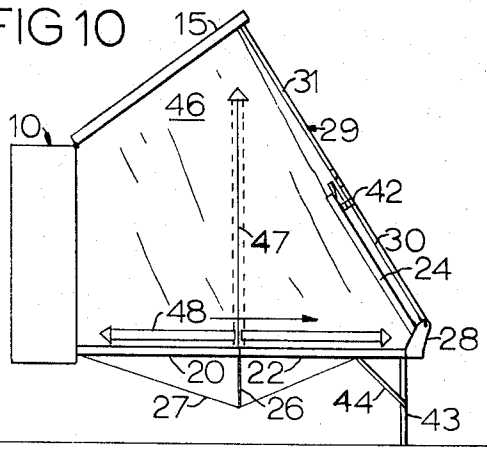


FIG 11

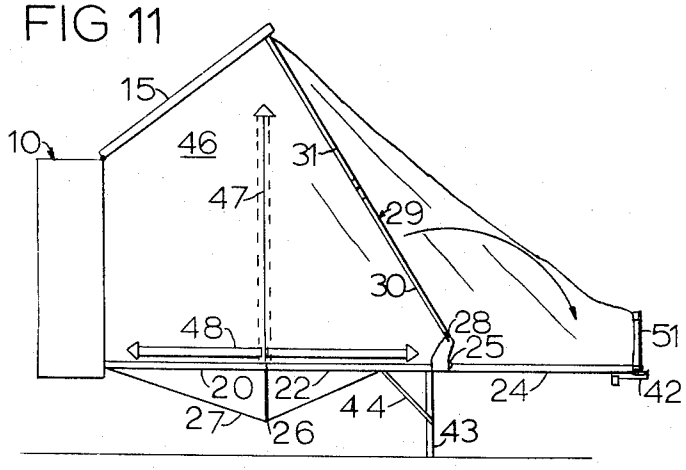


FIG 12

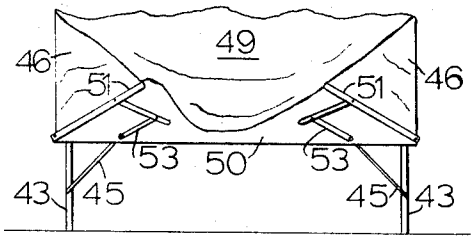
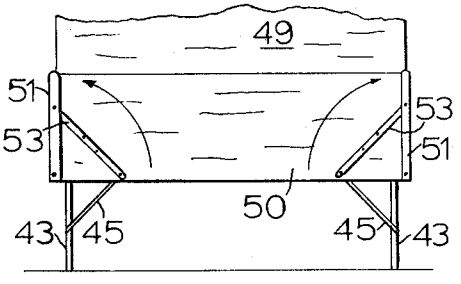


FIG 13



FOLDABLE CAMP SHELTER

BACKGROUND OF THE INVENTION

The present disclosure relates to a camp shelter for travel purposes. It is designed specifically to provide a compact assembly that can be mounted at the rear or on the roof of a passenger vehicle. It is adaptable to small passenger sedans or to vehicles of any size. The camp shelter assembly is stored in such fashion as to be readily erected in a semi-automatic progression. It is basically erected by a series of steps which can be controlled by one or two people. It merely requires the various elements to be manually extended or pulled from the storage container recess. Besides direct use on a passenger vehicle, the structure might be used in conjunction with a truck, truck-camper, or trailer, to provide additional portable sleeping space for travelers and campers.

The present shelter is designed to provide several advantages not available in conventional tents. First, it provides rigid-walled storage so that the structure can be mounted at the exterior of a vehicle in its own container. It eliminates the need for separable pole assemblies, exterior supports or anchoring tent pegs. It provides a rigid, smooth floor surface that is elevated above ground level. A portion of the shelter has rigid walls on which lamps or other appliances can be permanently or separably attached. Finally, it provides ease of erection in a semi-automatic fashion not available in tent assemblies.

SUMMARY OF THE INVENTION

The invention disclosed relates to the combination of a hollow, rigid-walled container body and hinged cover, together with a multi-section floor assembly and flexible shelter walls connected between the container body, floor section and cover in such fashion as to enclose useable sleeping and sitting space for portable shelter purposes. A special foldable roof brace elevationally supports the flexible walls and cover above the extended floor sections. The various elements are interconnected in such fashion as to be semi-automatically erected upon their extension outwardly from the recess of the container.

A first object of this invention is to provide semi-automatic erection of a useable camp shelter assembly having self-storage in a rigid-walled container capable of being mounted at the exterior of a vehicle.

Another object of this invention is to provide such a shelter assembly using a composite of rigid-walled and flexible-walled components.

Another object of this invention is to provide a fully enclosed camp shelter which includes its own floor assembly located at an elevation above the supporting ground surface.

Another object is to provide a relatively simple basic structure that can be economically manufactured for use by the traveling and camping public.

These and further objects will be evident from the following disclosure, taken together with the accompanying drawings. The drawings illustrate the essential details of one specific embodiment of the invention, but are not intended to themselves limit the scope of this disclosure.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation view of the erected camp shelter;

FIG. 2 is a view illustrating the mounting of the stored camp shelter at the rear of a vehicle;

FIG. 3 is a rear view of the shelter shown in FIG. 1;

FIG. 4 is an enlarged fragmentary sectional view taken along line 4—4 in FIG. 3, showing the folding position of the brace apparatus in dashed lines;

FIG. 5 is a front perspective view of the erected camp shelter seen in FIG. 1;

FIG. 6 is a fragmentary view looking along line 6—6 in FIG. 4;

FIG. 7 is an enlarged side elevation view of the stored camp shelter taken along a vertical plane inwardly adjacent to one side wall of the storage container body;

FIGS. 8–13 are a series of simplified schematic views showing the steps in erecting the camp shelter;

FIG. 8 is a side view showing the cover being lifted;

FIG. 9 is a side view showing the first two sections of the floor being pulled outwardly from storage;

FIG. 10 is a side view showing the first two floor sections and cover brace in position;

FIG. 11 is a side view showing the third floor section in position;

FIG. 12 is an end view showing the initial condition of the enclosure end support arms; and

FIG. 13 is an end view showing the erected end support arms.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The present portable and foldable shelter is designed specifically for use in conjunction with a motor vehicle such as a passenger automobile or van. The shelter folds for storage within a rigid container body that provides a compact assembly that can be mounted at the rear or top of a vehicle in the manner generally illustrated in FIG. 2. However, when erected, the shelter can easily provide ample room for two adults, even when designed in a size suitable for mounting on a compact sedan.

The container body is rigid-walled and may be formed from suitable sheet materials, such as plywood, sheet metal, plastic resins etc. The container body is generally designated in the drawings by the numeral 10. It comprises an upright forward wall 11 bounded by upright side walls 12, a bottom wall 13 and top wall 14. The walls 11–14 define a rearwardly-facing open container recess within which the foldable portions of the shelter are stored. As will be evident below, the container body and cover also form an integral part of the erected shelter.

Container body 10 is provided with a cover 15. Cover 15 is mounted across the rear edge of top wall 14 by hinges 16. It is selectively secured to the bottom wall 13 by a latch controlled by a handle 17. When closed, cover 15 seals and encloses the recess within container body 10 and is positioned parallel to and spaced rearwardly from the upright forward wall 11.

When designed to be carried at the rear of an automobile, as shown in FIG. 2, it might be necessary to provide the container with rear lamp units 18 wired in parallel with the conventional rear lamp units on the vehicle. The addition of such lamp units permits the container body to be designed at a maximum width

across the vehicle and thereby provide the maximum possible shelter size.

Hinged within the container body **10** is a shelter floor comprising rigid rectangular sections which are folded in an accordion-type pattern. The folded positions of these sections are best seen in FIG. **7**, and the extended positions of them are best understood from FIG. **1**. A first floor section **20** is pivotally connected to bottom wall **13** of container body **10** by hinges **21** at a location adjacent to the inner surface of upright forward wall **11**. The axis of hinges **21** is transverse and parallel to the axis of hinges **16**. When extended, it is secured by spring latches **19** (FIG. **1**) which hook under the edge of bottom wall **13**. A second floor section **22** is hinged to the outer edge of floor section **20** by hinges **23**. Likewise, a third floor section **24** is connected by hinges **25** to the outer edge of the floor section **22**. The length of each floor section **20** is substantially equal to the height of the upright forward wall **11**, taking into consideration the necessary clearance required for storage of the elements within con-tainer body **10**.

The outer edge of the second floor section **22** is supported, when extended, by ground engaging posts **43**. The intermediate edges of the floor sections **20, 22** are elevationally supported by means of foldable trusses. The trusses are located adjacent to the side edges of the floor sections **20, 22**. Each comprises a fixed length of cable **27** anchored respectively at positions adjacent the inner edge of the first floor section **20** and the outer edge of the second floor section **22**. A rigid pivotal strut **26** is mounted to the floor sections **20, 22** coaxially with the axis of hinges of **23**. The center of cable **27** is fixed to the outer end of strut **26** so that outward planar extension of floor sections **20, 22** results in automatic positioning of struts **26** and cables **27** to provide an effective load-bearing truss system beneath the floor sections **20, 22**.

As can be seen in FIG. **1**, cover **15** forms a substantial portion of the composite roof above the erected shelter. This roof structure is elevationally supported by exterior roof braces at each side of the assembly and generally designated by the numeral **29**. Each roof brace comprises a lower rod **30** and upper rod **31** arranged in overlapping end-to-end relation with respect to one another. The lower rod **30** is pivoted at **41** to a rigid bracket **28** at the outer end of the second floo; section **22**. The upper rod **31** is pivoted to the outer end of cover **15**. The overlapping ends of rods **30, 31** are connected to one another by a pivot bracket **32**, best seen in FIGS. **4** and **6**. The pivot bracket **32** encircles the upper end of rod **30** and is fixed securely to rod **30** as an integral part thereof. It has an inwardly facing concave recess **33** adapted to seat the rod **31** in an adjacent parallel position alongside rod **30** in the manner shown in full lines in FIGS. **4** and **6**. The rods **30, 31** are pivoted to one another about a transverse pivot pin **34** extending through the rods and bracket **32**. The axis of pin **34** is parallel to the previously described axes of the floor sections and container cover.

The inwardly facing end of transverse pivot pin **34** has a reduced diameter section **35** which secures pin **34** to rod **31** for transverse positioning purposes. While rod **31** is free to pivot with respect to pin **34**, it is transversely locked to the pin **34** for conjoint movement parallel to the pin axis. The portion of pin **34** received through rod **30** is provided with an upright slot through which is received a hooked bent end section **39** of rigid wire formed integrally with a tension spring **37** anchored to bracket **28** at the exterior of lower rod **30**. The wire extension of spring **37** runs within the tubular rod **30** and the inclined surface of section **39** transversely positions pin **34** by engagement with a small pin **40** fixed to pivot pin **34** across slot **36** (FIG. **6**). When the force exerted by spring **37** draws the hooked end section **39** downwardly relative to rod **30**, the engagement of pin **40** causes the pivot pin **34** to move outwardly in a transverse direction and thereby seat rod **31** in the concave recess of pivot bracket **32** as seen in full lines in FIG. **6**.

The outer end of the third floor section **24** is provided with side brackets **42** having concave recesses facing upwardly when in an extended position. These brackets **42** are adapted to receive and engage the upper ends of rods **30** when the floor section **24** is folded about hinges **25** to an upwardly and forwardly inclined position.

Posts **43**, which serve as support legs for the area of the shelter under the roof braces **29**, are pivotally connected at the underside of the floor section **22** at each side of the shelter assembly. They are pivoted about axes perpendicular to the axis of hinges **25** and include integral braces **44** extending forwardly alongside floor section **22** coaxially pivoted with posts **43**. The posts or legs **43** are selectively locked in a vertical position by manually releasable braces **45** of the toggle type. Each post is preferably provided with a lower foot that is vertically adjustable for leveling of the camping shelter.

The camp shelter is completed by flexible shelter walls constructed from canvas or other woven fabrics, sheet plastic material, such as those used for vinyl upholstery purposes, or any other suitable flexible sheet material. The flexible shelter walls include upright side walls **46** extending along the side edges of the three floor sections **20, 22** and **24** and are provided with suitable releasable vertical openings **47** and horizontal openings **48**. These can be selectively released or secured by conventional slide fasteners, zippers, or snap fasteners. An integral top wall **49** extends across the side walls **46** between the outer or rear end of the shelter and the outer edge of cover **15**. A relatively low rear end wall **50** completes the structure and envelopes the outer edge of the floor section **24**.

The rear end wall **50** is held upright by yieldable support arms **51** pivoted to the outer edge of floor section **24** by pivot brackets **52**. The axis of each bracket **52** is slightly inclined rearwardly and downwardly with respect to the plane of floor section **24** to bias the yieldable support arms **51** outward or rearward with respect to the shelter assembly. The upper ends of the arms **51** are engaged within anchor loops **54** formed at the corner between the shelter top wall **49** and rear end wall **50**. Manual locking braces **53** are connected between the edge of floor section **24** and the intermediate portions of arms **51** to selectively lock them in upright positions.

Many minor details of the assembly have not been detailed herein, since these are believed to be within the skill of a person experienced in the design and structure of foldable camping shelter equipment. The size relationships of the various elements is believed to be evident from the drawings, particularly FIG. **7**, which illustrates quite accurately the manner by which the assembly can be effectively folded within a container body of minimum thickness between its rear and

front walls when closed. The shelter assembly has been designed for minimum manipulation during erection, since it is recognized that this must often be accomplished by campers or travelers at the end of the day, when they are tired and when available light and other facilities might be very minimal.

To understand the erection of the shelter, one should begin with FIG. 7, which shows the three floor sections 20, 22 and 24 folded in vertical positions substantially abutting one another. It must be kept in mind that considerable flexible fabric material is located in the folded assembly between the first floor section 20 and the forward wall 11 of the container body, and between the second and third floor sections 22, 24. There also is substantial fabric located between the inner surfaces of cover 15 and the third floor section 24. The folded portions of the roof braces 29 are adjacent the container cover 15 at each side of the unit.

Erection of the camp shelter first requires vertical positioning of container body 10, preferably while remaining mounted to the supporting vehicle. The nature of the particular mounting brackets is not a part of this disclosure and is believed to be within the skill of persons in this field. However, if the shelter is to be detached from the vehicle, supporting posts or legs can be foldably or releasably mounted to the underside of the upright container body 10 or floor section 20 for ground support purposes.

With the container body 10 in a vertical position, handle 17 can be manipulated to release the latch securing cover 15. Cover 15 is then lifted to pivot it about the upper axis of hinges 16 (FIG. 8). This results in partial unfolding of the flexible shelter walls and pivotal movement between the rods 30, 31 of roof braces 29. The cover 15 is fully raised as shown in FIG. 9, and the upper rods 31 are loosely engaged in aligned positions about the axis of pivot pins 34. One can then grasp the outer edge of the second floor section 22, which is located at the bottom of the container recess, and pull it rearwardly in the manner shown in FIG. 9. As the floor sections 20 and 22 unfold, the truss formed by cable 27 and strut 26 automatically positions itself to support their intermediate portions.

As floor sections 20, 22 are being pulled outwardly, the legs 43 can be manually pivoted downwardly to upright vertical positions, resulting in the partially unfolded condition shown in FIG. 10. It is to be noted that at this time the third floor section 24 is still resting on the roof brace 29 at each side of the assembly, being supported by the retaining brackets 42. Also, as the floor sections 20, 22 pivot to their horizontal aligned positions, the pivotal movement between the anchored ends of lower rods 30 and springs 37 pulls downwardly on the springs 37 and the resulting tension forces cause the hooked end sections 39 to lock the rods 30, 31 by pulling outwardly on pins 40 as previously described.

Completion of the shelter is accomplished by pivoting the third floor section 24 about hinges 25 to an aligned horizontal position extending outwardly from the first two floor sections. The tension in the flexible shelter walls results in partial erection of the end support arms 51, as seen in FIG. 12. Erection is completed by locking the arms 51 in vertical positions as shown in FIG. 13.

The floor section 24 is elevationally supported by abutment of the adjacent edges of floor section 22 and by the tension forces in the flexible shelter walls extending between the rigidly braced cover 15 and floor section 24. The minimum interior clearance above floor section 24 is designed to reduce the load that might be expected to be exerted on this floor section and no additional ground support is normally necessary, although it could be provided if required. The purpose of the extension provided by floor section 24 is to support the feet of persons sleeping within the erected shelter.

When erected, the shelter provides compact enclosed space which can easily sleep two adult persons even when designed for use at the rear of relatively small passenger vehicles. The interior shelter area is completely unobstructed by posts or struts, and comprises the rigid upper surfaces of the floor sections 20, 22, 24, the rigid inside surfaces of the container body 10 and cover 15, and the inside surfaces of the flexible walls 46, 49 and 50. It is to be noted that the roof braces 29 and end support arms 51 are exterior of the shelter. Rigid inside walls of cover 15 and body 10 provide surfaces on which appliances such as lamps can be permanently or detachably mounted. The smooth, above-ground floor surface assures comfortable sleeping and protection against ground water. The portion of the shelter above the floor sections 20, 22 affords reasonable elevational clearance for access and accommodation of campers while in sitting positions. The elongated slope of the top wall 49 of the flexible shelter assures prompt drainage of water during rainstorms.

The shelter is folded by reversing the steps described with respect to its erection. When desired, many of the pivot axes can be spring biased or biased by torsion rods to assist in returning the various elements to a storage condition. To unlock the roof braces 29, the users must lift upwardly at the area of hinges 23 between the first and second floor sections 20, 22. This pivots the lower anchor of spring 37 relative to the lower rod 30 at each side of the shelter, and permits the pivot pins 34 to be pulled inwardly and thereby unlock the roof braces 29.

The shelter described above has been designed to facilitate travel and weather protection of campers using passenger sedan vehicles which otherwise are not particularly suited to serve as camping shelters. The apparatus has been designed to be effectively erected by one or two persons with a minimum of effort in a semi-automatic manner. It essentially unfolds from the rigid container in a natural progression that is believed to be evident by the series of steps illustrated in FIG. 8–13. While greater care is required in returning the various elements to the storage condition, since this requires folding of the flexible walls, this again is essentially semi-automatic and within the skill of the average motorist or camper.

Various modifications or refinements will probably be evident to one skilled in this field and minor changes and improvements are anticipated. For these reasons, only the following claims are set out as definitions of the invention disclosed herein.

Having thus described my invention, I claim:

1. A foldable camping shelter, comprising:

a rigid-walled container body including an upright rectangular end wall joined about its respective edges to a bottom wall, a pair of transversely spaced side walls and a top wall, each having open outer edges and jointly defining an open container recess together with the end wall;

a rigid rectangular container cover pivotally connected to the container body along a transverse axis at the outer edge of the top wall, for completely enclosing the container recess;

said cover being pivotally movable relative to the container body between a downward closed position enclosing the container recess and an opened roof position wherein the cover extends upwardly and outwardly from its connection to the top wall;

a foldable floor comprising a first rigid panel pivotally mounted along a first transverse edge thereof across the bottom wall within the container recess, said first panel being pivotally connected along a second transverse edge thereof to a first transverse edge of a second rigid panel having a second transverse edge,

said foldable floor being movable between a storage position wherein the panels are folded upon one another parallel to the end wall within the container recess and a floor position wherein they are extended coplanar to one another and parallel to the bottom wall;

a pair of foldable braces extending between the rigid cover and the second floor panel with one end of each brace being pivotally connected to the cover and the other end of each brace being pivotally connected to the second floor panel to pivotally interconnect the floor and the rigid cover so that when the cover is pivoted from the closed position to the opened roof position the braces are automatically unfolded to an extended condition to support the rigid cover in the opened roof position as the foldable floor is movable between the storage position and the floor position and so that when the cover is pivoted from the open roof position to the closed position the braces are automatically folded to a contracted condition within the container body;

locking means for selectively locking the braces in the extended condition; and

flexible shelter walls extending between the cover, the side walls and floor panels, the shelter walls being storable entirely within the container recess when the floor is in its storage position and the cover is in its closed position.

2. The foldable camping shelter as defined in claim 1 further comprising a flexible foldable truss means joining the first floor panel and the second floor panel for supporting the floor panels coplanar to each other in the floor position.

3. The foldable camping shelter as defined in claim 2 wherein the flexible foldable truss includes a rigid strut pivotally mounted to the floor at the pivotal connection between the first and second floor panels and a flexible cable having ends anchored to the panels and an intermediate section affixed to the strut to automatically unfold the truss as the floor is unfolded and to automatically fold the truss as the floor is folded.

4. The foldable camping shelter as defined in claim 1 wherein the floor further comprises a third floor panel pivotally connected to the second floor panel for extending outward beyond the rigid cover and wherein the flexible shelter walls extend from the rigid cover to the third floor panel forming a flexible roof section.

5. The foldable camping shelter as defined in claim 4 further comprising support arms pivotally mounted to the third floor panel for supporting a section of the flexible shelter wall extending from the rigid cover to the third floor panel in an upright orientation to form a flexible end wall.

* * * * *