United States Patent [19]

Franzen

[11] **3,742,966**

[45] **July 3, 1973**

[54] **COLLAPSIBLE SHELTER FOR MOUNTING ON A TRANSPORTATION VEHICLE**

[76] Inventor: **Erwin F. Franzen,** 3673 Randolph St., Lansing, Ill.

[22] Filed: **Mar. 10, 1971**

[21] Appl. No.: **122,768**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 36,709, May 13, 1970, abandoned.

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

[51] **Int. Cl.** **A45f 1/00,** B60p 3/32

[58] **Field of Search** ..... 135/1 A, 4 A

[56] **References Cited**

UNITED STATES PATENTS

3,489,452	1/1970	Plante	135/1 A X
2,930,051	3/1960	Kampmeier	135/1 A X
3,202,159	8/1965	Reed	135/1 A

FOREIGN PATENTS OR APPLICATIONS

1,194,149	5/1959	France	135/1 A
489,438	1/1954	Italy	135/1 A

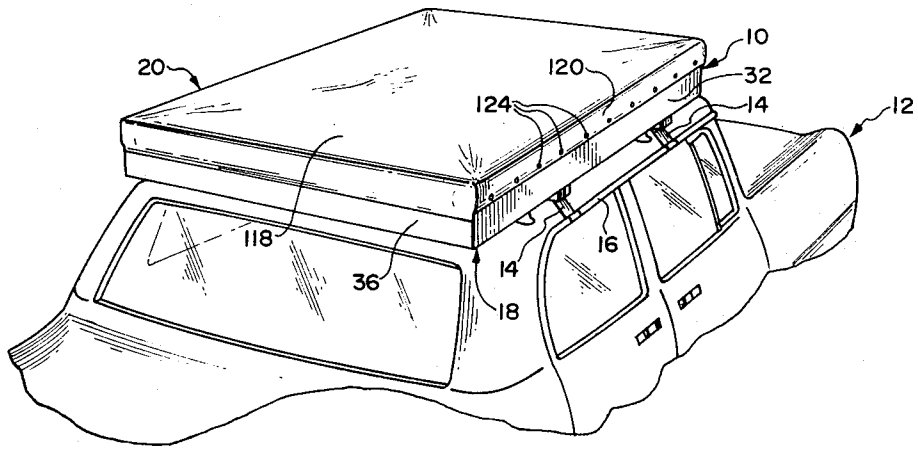
Primary Examiner—J. Karl Bell

Attorney—Stone, Zummer & Aubel

[57] **ABSTRACT**

A collapsible shelter which is mountable on a transportation vehicle and is carried by the vehicle. The shelter includes a rigid receptacle having a substantially flat bottom and a plurality of side walls secured to the outer periphery of the bottom. A pair of parallel support walls is fixed to the bottom interiorally of the side walls. A bow is pivotedly mounted on the support walls. The bow has its axis of pivoting adjacent to one end of the receptacle, and the length of the bow is less than the length of the receptacle to allow the bow to be positioned in the receptacle in a stored position but extend beyond the end of the receptacle in a raised position. A flexible roof is connected to the receptacle and to the bow, whereby the bow releasably supports a portion of the roof above the receptacle and a portion of the roof extends beyond the receptacle.

7 Claims, 9 Drawing Figures



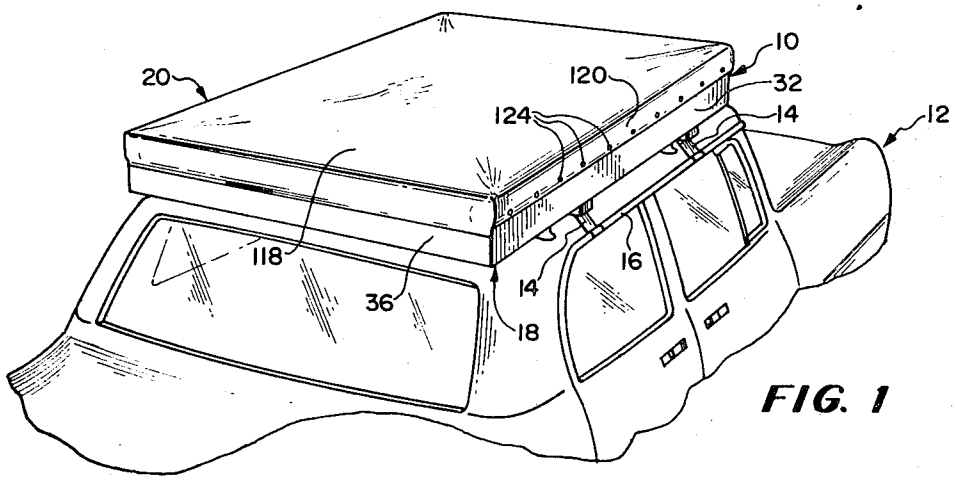


FIG. 1

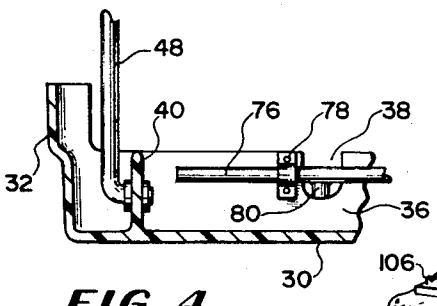


FIG. 4

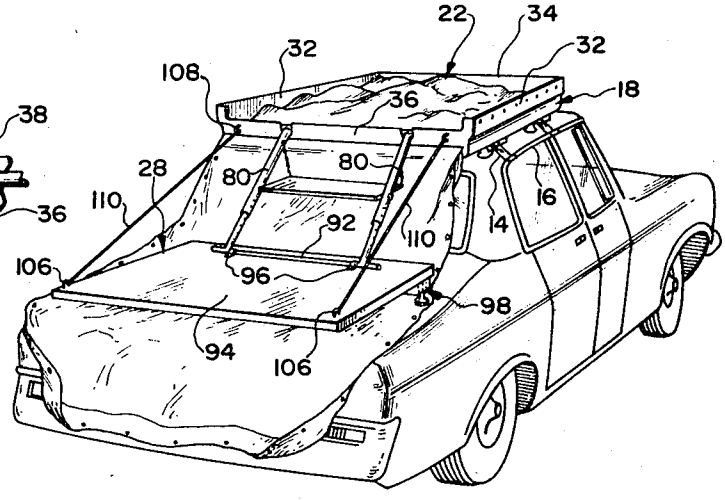


FIG. 2

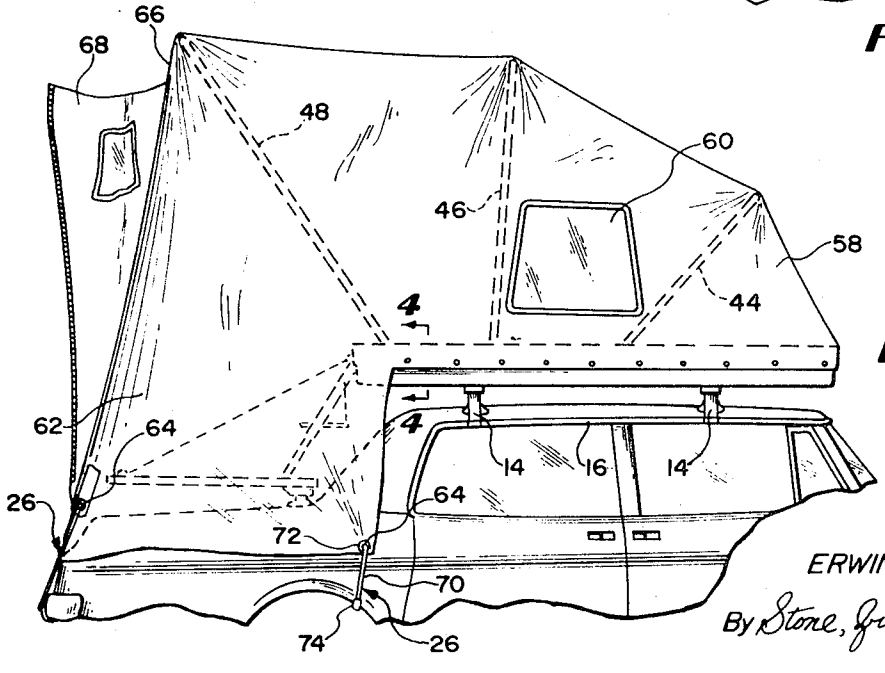


FIG. 3

INVENTOR:
ERWIN F. FRANZEN
By Stone, Gummer & Aubel
Attorneys

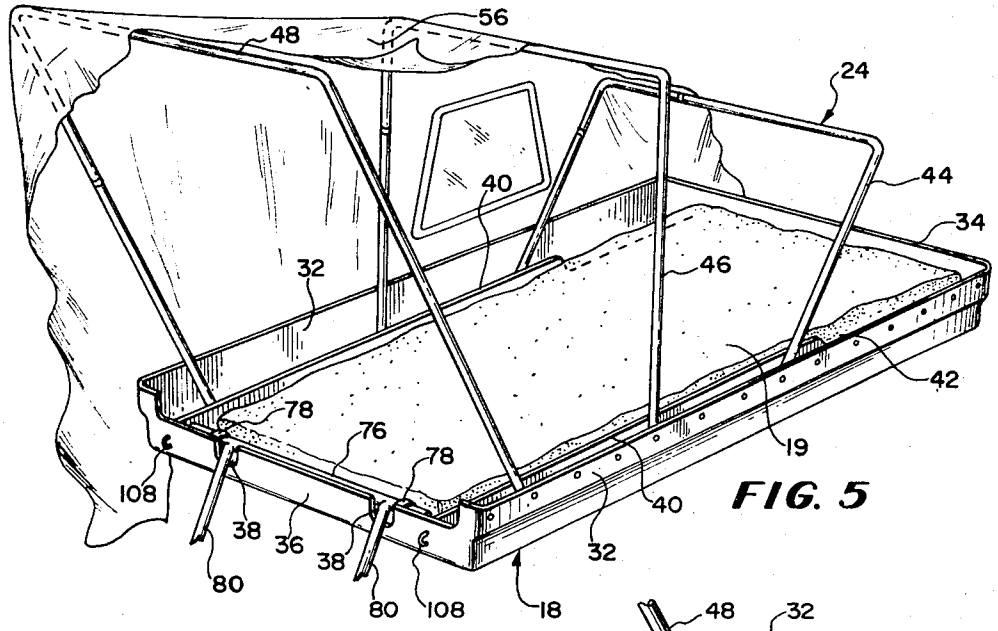


FIG. 5

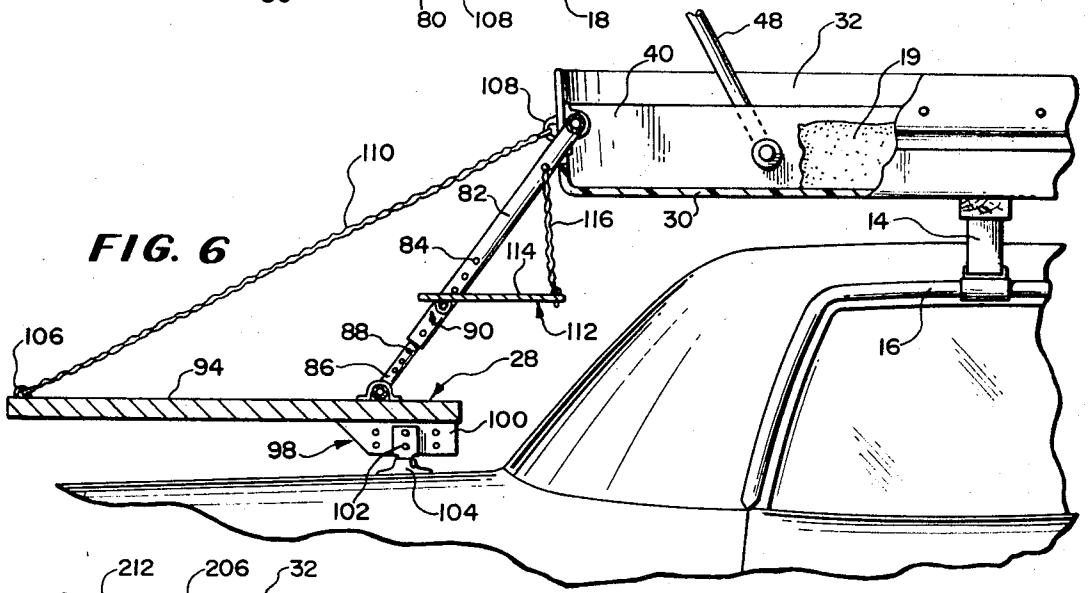


FIG. 6

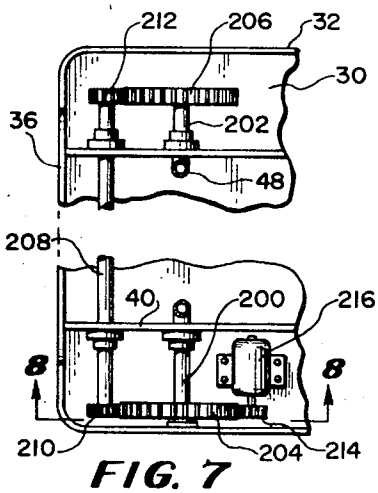


FIG. 7

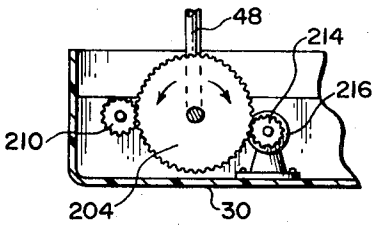


FIG. 8

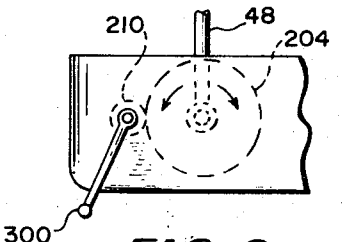


FIG. 9

INVENTOR:
ERWIN F. FRANZEN

By Stone, Jummer & Aubel
Attorneys

COLLAPSIBLE SHELTER FOR MOUNTING ON A TRANSPORTATION VEHICLE

CROSS-REFERENCE TO RELATED APPLICATION

This is a continuation-in-part of U.S. Pat. application Ser. No. 36,709, filed May 13, 1970, entitled COLLAPSIBLE SHELTER FOR MOUNTING ON A TRANSPORTATION DEVICE and now abandoned.

BACKGROUND OF THE INVENTION

The use of a transportable shelter has gained a high degree of acceptance, not only by sportsmen and outdoorsmen but also by families. The use of a transportable shelter allows a family or an outdoorsman to travel to heretofore unavailable locales, and has provided substantial economies for a family since it is not necessary for the family to pay for lodging in a hotel or motel. Thus, the use of campers, trailers and tents has gained in popularity. However, a trailer slows down a vehicle traveling between two locales having good highways therebetween. In many areas, there are restrictions as to where an automobile may go pulling a trailer. Campers suffer from the limitation that a special vehicle is used and the investment for a camper is quite substantial. Tents resolve the problems of the difficulty in hauling and have a low investment cost. However, a tent is difficult to erect and collapse under adverse conditions, and it is necessary to find a particularly suitable location for a tent before the tent can be erected with any degree of safety or comfort.

SUMMARY OF THE INVENTION

The present invention is an improved collapsible shelter which is mounted on a transportation vehicle. The shelter is an improvement over tents and trailers in that it requires very little space and it is mounted on the vehicle. It is raised easily, and it is taken down quite easily. The shelter includes a mattress receptacle which is rigid and is mounted on the transportation vehicle. A flexible cover is positioned over the receptacle to protect the interior of the receptacle, and the cover is easily removed. A collapsible roof support is contained in the receptacle, and a flexible roof is quickly and easily extended to protect the interior of the receptacle and the roof extends beyond the receptacle. A stand is positioned under the roof extension for supporting a user of the shelter to provide a convenient dressing area. A plurality of restrainers are connected to the roof for holding the roof in resilient attachment to the vehicle.

It is one of the principal objects of this invention to provide a collapsible shelter which is set up easily and conveniently, and the shelter is collapsed with a great deal of facility.

It is another object of the herein-disclosed invention to provide a collapsible shelter which is simple to manufacture and is manufactured for a low cost.

It is a further object of the present invention to provide a collapsible shelter which is easy to maintain.

It is a still further object of the instant invention to provide an improved construction for a collapsible shelter which is mounted on a vehicle with a minimum of effort.

Other objects and uses of the present invention will become readily apparent to those skilled in the art upon a perusal of the following specification in light of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a portion of an automobile with a collapsible shelter embodying the instant invention mounted on the roof of the automobile, with the shelter shown in a closed attitude;

FIG. **2** is a perspective view of the shelter shown in FIG. **1**, but with the shelter shown in a partially open attitude;

FIG. **3** is a side elevational view of a portion of the automobile shown in FIGS. **1** and **2**, with the shelter of FIGS. **1** and **2** shown in a fully raised attitude with a door of the shelter shown in a partially open position;

FIG. **4** is an enlarged cross-sectional view of a portion of a receptacle portion of the shelter of FIG. **3**, taken on Line **4—4** of FIG. **3**, with a mattress removed in order to show the relationship of a bow and a portion of a stand mounted on the receptacle;

FIG. **5** is a perspective view of the shelter shown in FIG. **3**, with a portion of the top removed in order to show the interrelationship of the bows and other parts of the receptacle;

FIG. **6** is a cross-sectional view of the stand of the collapsible shelter and a portion of the receptacle broken away in order to show the interior construction thereof;

FIG. **7** is a plan view of a portion of the receptacle, with parts broken away, showing an electric motor drive for raising and lowering the top of the shelter;

FIG. **8** is a cross-sectional view taken on line **8—8** of FIG. **7**; and

FIG. **9** is a side elevational view of a portion of the receptacle, showing a hand crank used in conjunction with a manual drive for raising and lowering the top of the shelter.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, a collapsible shelter embodying the instant invention and generally indicated by numeral **10** is shown mounted on a roof of an automobile **12** by a pair of conventional mounting brackets **14** which are secured to gutters **16** of the automobile. The collapsible shelter **10** generally includes a mattress receptacle **18** with a mattress **19** in the receptacle and a cover **20** connected to the receptacle. A canvas top **22** is connected to the receptacle, and a roof support generally indicated by numeral **24** is connected to the receptacle for supporting the top. A plurality of restrainers **26** is connected to the top for holding the roof in a selected position. A stand **28** is pivotedly connected to the receptacle and is supported partially by the automobile **12**.

The mattress receptacle **18** may be best seen in FIGS. **5** and **6**. The receptacle is, in this instance, a molded fiberglass receptacle, which includes a flat bottom or floor **30** to which are attached the mounting brackets **14**. Formed integral with the longitudinal edges of floor **30** is a pair of longitudinal side walls **32**. A front end wall **34** is formed integral with the front edge of the bottom and with the longitudinal side walls. A rear end wall **36** is formed integral with the rear edge of bottom **30** and the opposite ends of the longitudinal side walls **32**. The rear end wall **36** has a pair of bracket recesses **38** formed therein for receiving a portion of the stand **28**. The bottom **30** also has a pair of support walls **40**

formed integral therewith. Each of the support walls **40** has a bow recess **42** adjacent to the front wall **34.**

The roof support **24** is mounted on the support walls **40.** The roof support includes a front or short bow **44,** a middle or intermediate bow **46,** and a long or rear bow **48.** The general construction of each of the bows is identical to the other bows. Each bow is tubular and has a general U-shape in that it has a pair of parallel legs and an interconnecting member formed integral with the legs. Each of the bows has a pair of legs having a length different from the length of the legs of the other bows. The short bow has the shortest legs and the long bow **48** has the longest legs, as may be seen in FIGS. **3** and **5.** All three of the bows are pivotedly connected to the support walls in a conventional manner. The length of the legs of short bow **44** is such that the bow fits within the receptacle **18,** as do the other two bows **46** and **48.** The bow recess **42** of the support walls **40** allows the bows to rest below the level of the side walls. The short bow **44** has its axis of pivoting adjacent to the front wall **34.** The long bow **48** has its axis of pivoting positioned adjacent to the rear end wall **36,** and the length of the legs of the bow **48** is such that the bow fits entirely within the receptacle. In a raised position, the long bow may be extended out beyond the end of the rear end wall **36,** as may be seen in FIGS. **3** and **5.** As will be described in detail hereinafter, the bow **48** moves the top in and out of the receptacle and holds the top above the stand **28** to provide standing room.

The top **22** is made of a conventional canvas material. The top includes a roof **56** which is supported on the interconnecting members of the bows. The roof has one end fixed to the front end wall **34.** In a raised attitude, the roof **56** includes a portion which extends over the receptacle and an auxiliary portion which extends out beyond the receptacle. A pair of side panels **58** is sealingly fixed to the roof **56.** Each of the side panels has a window **60** which may be zipper closed by a window panel. Each side panel includes a lower extension **62** which extends down beyond the receptacle **18,** as may be seen in FIG. **3.** The extension has a plurality of hook rings **64** for receiving the restrainers **62.** A rear panel **66** is formed integral with the side panels and is sealingly connected to the roof **56.** The rear panel **66** has a door **68** formed therein to allow ingress and egress to the interior of the shelter.

Each of the restrainers **26** includes an elastic strap **70** having a panel hook **72** on one end for positioning in a hook ring **64** and a bow hook **74** for engagement with the automobile **12.**

The stand **28** includes a stand axle **76** which is rotatably connected to the rear end wall **36** by a pair of axle brackets **78.** A pair of telescoping arms **80** is connected to the axle **76.** In an active position, the arms **80** are positioned in the bracket recesses **38.** Each of the telescoping arms **80** includes a tube **82** having a pluraity of pin apertures **84** contained therein. A rod **86** is slideably mounted in the tube **82** and has a plurality of mating apertures **88.** A pin **90** is removably mounted in a selected pair of apertures. The rods **86** are connected to a platform axle **92,** which is pivotedly connected to a flat platform **94** by a pair of platform axle brackets **96.**

The platform **94** has a platform stop **98** mounted on its bottom portion adjacent to the end attached to the arms **80.** The platform stop **98** includes a bracket **100.** A platform leg **102** is fixed to the bracket, and a foot **104** which is adapted for mounting on an automobile rear deck lid is fixed to the leg. The platform has a pair of eyes **106** secured to the opposite end and a pair of receptacle eyes **108** are secured to the rear end wall **36** and the support walls **40.** A pair of chains **110** is secured to each of the eyes **106** and **108** on the same side of the platform for supporting the platform **94** in a substantially horizontal position. It is apparent that hinged metal straps could be substituted for the chains **110,** providing that the hinging were appropriately positioned.

The stand **28** also includes a seat **112.** The seat **112** includes a seat platform **114** which has one end pivotedly connected to the arms **80.** The other end of the seat platform is connected to a pair of seat chains **116,** which seat chains are connected to their respective arms **80,** as may be best seen in FIGS. **2** and **6.**

The cover **20** is, in this instance, a flexible, waterproof plastic sheet material and includes a top sheet **118** and an apron **120.** A portion of the apron **120** is fixed to the rear end wall **36.** The remainder of the apron **120** is releasably connected to the longitudinal walls **32** and the front end wall **34** by conventional snaps **124.**

FIG. **1** shows the shelter **10** mounted on the top of an automobile in a closed attitude for traveling. It may be seen that the shelter is contained entirely on top of the automobile **12,** and the shelter provides a low profile so that the shelter does not impede the operation of the automobile.

The shelter **10** is erected with a great deal of facility. It may be erected at any place where the automobile **12** is positioned so that it is not necessary to look for a location which is particularly dry or one which accommodates itself to stakes or other paraphernalia. The cover **20** is loosened by unsnapping the apron **120** from the longitudinal sides and the front end wall **34.** The cover is then laid over the rear deck lid of the automobile **12.** The stand **28** is then removed from the interior of receptacle **18.** The platform **94** is raised, and the axle **76** is pivoted in the mounts **78** so that the arms **80** are positioned in the bracket recesses **38.** The platform **94** is pivoted about the platform axle **92** until the feet **104** rest on the rear deck lid of the automobile **12** with the sheet **118** of cover **20** interposed to protect the rear deck lid, as shown in FIG. **2.** The rear portion of the platform is suspended between support chains **110.**

When the stand is in position, the operator may stand on the stand for raising the top. The operator need only grasp the rear panel **66** of the top **22** to pull the rear panel toward the rear of the automobile. As the panel is pulled out, the rear bow **48** is pivoted until the protion of the roof **56** between the rear bow and the intermediate bow **46** is extended. Then the intermediate bow **46** is raised; and finally the front or short bow **44** is raised. The operator pulls on the rear panel until the rear bow **48** passes an upright position and starts to swing downward toward the rear of the automobile. Then the weight of the panel carries the bow downward to its fully extended position. It may be appreciated that the roof **56** is fixed to the front end wall **34** so that the movement of the bow is restrained. The panels **58** are secured to the longitudinal side walls **32** and are held therein by snaps. The bottoms of the panels are secured to the automobile by restrainers **26,** which hold down the bottom of the panels and also maintain the shelter in a raised attitude.

It may be appreciated that the length of the arms **80** of the stand may be adjusted by selectively positioning the rods **86** within the tubes **82** to have an appropriate length of the arms **80** to accommodate a particular automobile construction. However, once the arms are positioned for a particular vehicle there is no further need of adjustment.

The instant shelter provides many comforts for the operator. The door **68** is opened and the operator climbs into the shelter to stand on platform **94.** The platform provides an area for a user to remove or put on clothing and a place for storage of some materials. The seat **112** also provides a convenient place for a user to sit in changing clothes or putting on or removing footwear. The seat also provides a convenient step for climbing into the matress receptacle.

It is a simple matter to collapse the shelter. First the restrainers **26** are removed and the side panels are unsnapped from the longitudinal side walls **32.** The operator need stand only on the platform and push the long bow **48** forward. The weight of the roof causes the short bow **44** to pivot downward and bring with it the roof and side panels. When the long bow **48** passes the upright position, the weight of the roof portion carries the bows and top into the receptacle. The support walls **40** have the bow recesses which accommodate the bows and a portion of the canvas. A portion of the side panels fits inside the space between the support wall and the adjacent longitudinal wall. The stand **28** is packed into the receptacle simply by pivoting the platform **94** upward and onto the arms **80** and pivoting the entire unit into the receptacle. The cover is then pulled over the top of the receptacle and snapped into position.

Although the foregoing description has been specifically described for use on an automobile, it may be readily appreciated that the instant construction may be mounted on top of a station wagon with the receptacle extending to the end of the station wagon and the stand **28** may be eliminated. The instant device may also be mounted on top of a truck or on the roof of a water craft.

In order to facilitate the raising and lowering of the top, a motor is provided for pivoting the long bow **48.** A top operator is shown in FIGS. **7** and **8.** The remainder of the shelter is identical to that described above, with only the modifications described hereinafter. The long bow **48** has a pair of short shafts **200** and **202** fixedly connected to the bow on the axis of pivoting of the bow. A gear **204** is mounted on the shaft **200,** and an identical gear **206** is mounted on the shaft **202.** A drive shaft **208** is rotatably mounted in the support walls **40.** The drive shaft **208** has a small gear **210** mounted on one end and meshing with the gear **204.** A pinion **212,** identical to gear **210,** is mounted on the other end of the drive shaft **208** and meshes with the gear **206.** A pinion **214** meshes with the gear **204,** which pinion is driven by a conventional electric motor **216.** The motor **216** is a reversible fractional horsepower motor which is energized by a conventional source of electricity such as the automobile battery by connecting the motor to the cigar lighter. The connection of the motor with the battery is not shown and is conventional herein. The motor **216** can operate in either direction for reasons which will become apparent hereinafter.

Once the cover is removed and the stand positioned, the motor **216** is energized to drive the gear **204** to lift the long bow **48.** It may be appreciated that the gear train from the gear **204** to the gear **206** is such that both gears are driven at the same speed so that the other side of the long bow **48** is also raised. The bow is raised, and it is necessary to attach the snaps and the restrainers as described above. In order to lower the shelter, the operation is reversed; and rather than the operator pushing the bow over, the motor is energized to rotate the bow toward the front and thereby collapse the shelter.

FIG. **9** shows a modified form of the invention wherein the electric motor is replaced by a hand crank **300.** In the form shown in FIG. **9,** the electric motor is eliminated, as well as the pinion **214.** A hand crank **300** is removably connected to the small gear **210** so that the turning of the crank **300** turns the gears **210** and **212** to rotate the gears **204** and **206** in a selected direction. It may be appreciated that by utilizing the crank arrangement, it is not necessary for an operator to climb onto the platform to pull up the bow, but rather he may stand alongside the automobile and crank up the bow. Also, lowering the shelter is facilitated in view of the fact that the operator need only crank the long bow to collapse the shelter after the snaps have been released.

Although a specific embodiment of the herein-disclosed invention has been shown and described in detail above, it is readily apparent that those skilled in the art may make various modifications and changes without departing from the spirit and scope of the present invention. It is to be expressly understood that the subject invention is limited only by the appended claims, and the detailed description set forth above is done so in compliance with the applicable patent statute.

What is claimed is:

1. A collapsible shelter adapted for mounting on a vehicle, including, a rigid receptacle, a bow pivotedly mounted on the receptacle, said bow having its axis of pivoting adjacent to one end of the receptacle, said bow being positionable in the receptacle in a stored position and being pivotal from the stored position to extend beyond the one end of the receptacle, a flexible roof supported by the bow above the receptacle and beyond the one end of the receptacle, and a stand connected to said receptacle adjacent to said one end, said stand being adapted to be stored in said receptacle, said stand includes an arm having one end connected to the receptacle, a seat connected to the arm, and a platform connected to the other end of the arm adapted for being supported on the vehicle.

2. A collapsible shelter adapted for mounting on a vehicle, including, a receptacle having a bottom and a plurality of side walls secured to the bottom, a pair of rigid support walls fixed to the bottom interiorally of said side walls, a bow pivotedly mounted on the support walls, said bow having its axis of pivoting adjacent to one end of the receptacle, and a flexible roof connected to the receptacle and the bow, whereby the bow releasably supports a portion of the roof above the receptacle and a portion of the roof extending beyond the receptacle.

3. A collapsible shelter as defined in claim **2,** including, a second bow pivotedly mounted on the support walls having its axis of pivoting adjacent to the other

end of the receptacle, said second bow having a length less than the length of the first-mentioned bow.

4. A collapsible shelter as defined in claim **3,** including, a third bow positioned between the first-mentioned bow and the second bow and connected to the roof for supporting the roof, said support walls each having a reduced portion adjacent to the other end to receive the bows therein.

5. A collapsible shelter adapted for mounting on a vehicle as defined in claim **2,** including, a cover having one edge fixed to the receptacle at the end adjacent to the axis of pivoting of the bow, said cover having the remainder of its edges releasably connectable with the receptacle.

6. A collapsible shelter adapted for mounting on a vehicle as defined in claim **2** wherein the support walls each have a reduced portion adjacent to the other end of the receptacle to receive the bow therein for storing the bow.

7. A collapsible shelter adapted for mounting on a vehicle, including; a rigid receptacle having a flat bottom and a rectangular shape, a pair of longitudinal walls formed integral with opposite edges of the bottom, a front end wall formed integral with one edge of the bottom and formed integral with the longitudinal end walls, and a rear end wall formed integral with the bottom and with the longitudinal wall; a cover fixed to the rear end wall and releasably connected to the longitudinal walls and the front end wall; said receptacle including a pair of support walls formed integral with the bottom and extending substantially parallel to the longitudinal walls between the front end wall and the rear end wall; each of said support walls having a recess adjacent to the front end wall; a bow pivotedly connected to the support walls adjacent to the rear end wall and being positionable in the recess of the support wall to be stored therein; a second bow pivotedly connected to the support walls adjacent to the front wall and being positionable in the recess to be stored therein; a roof having one edge secured to the front end wall and connected to the second bow and to the first-mentioned bow; a pair of side panels connected to the roof and extending to the receptacle; and a stand pivotedly connected to the receptacle; said stand having one arm pivotedly connected to the receptacle, a platform pivotedly connected to the other end of the arm, and a support connected to the platform for connection to the vehicle to be supported thereby.

* * * * *