United States Patent [19]

Norris et al.

[11] **3,861,572**

[45] **Jan. 21, 1975**

[54] **CARRIER MOUNTABLE ON THE ROOF RACK OF A CAR**

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[73] Assignee: **Olin Corporation**, New Haven, Conn.

[22] Filed: **June 7, 1973**

[21] Appl. No.: **367,909**

[52] **U.S. Cl.** ..... **224/42.1 E**, 135/1 A, 135/3 A, 135/4 A, 296/23 R, 296/27

[51] **Int. Cl.** **A45f 1/16**

[58] **Field of Search** ..... 224/42.1 E, 42.1 F, 42.1 D, 224/42.1 R, 29 R, 42.42 R; 296/23 MC, 23 R, 37 R, 27; 135/1 A, 5 A

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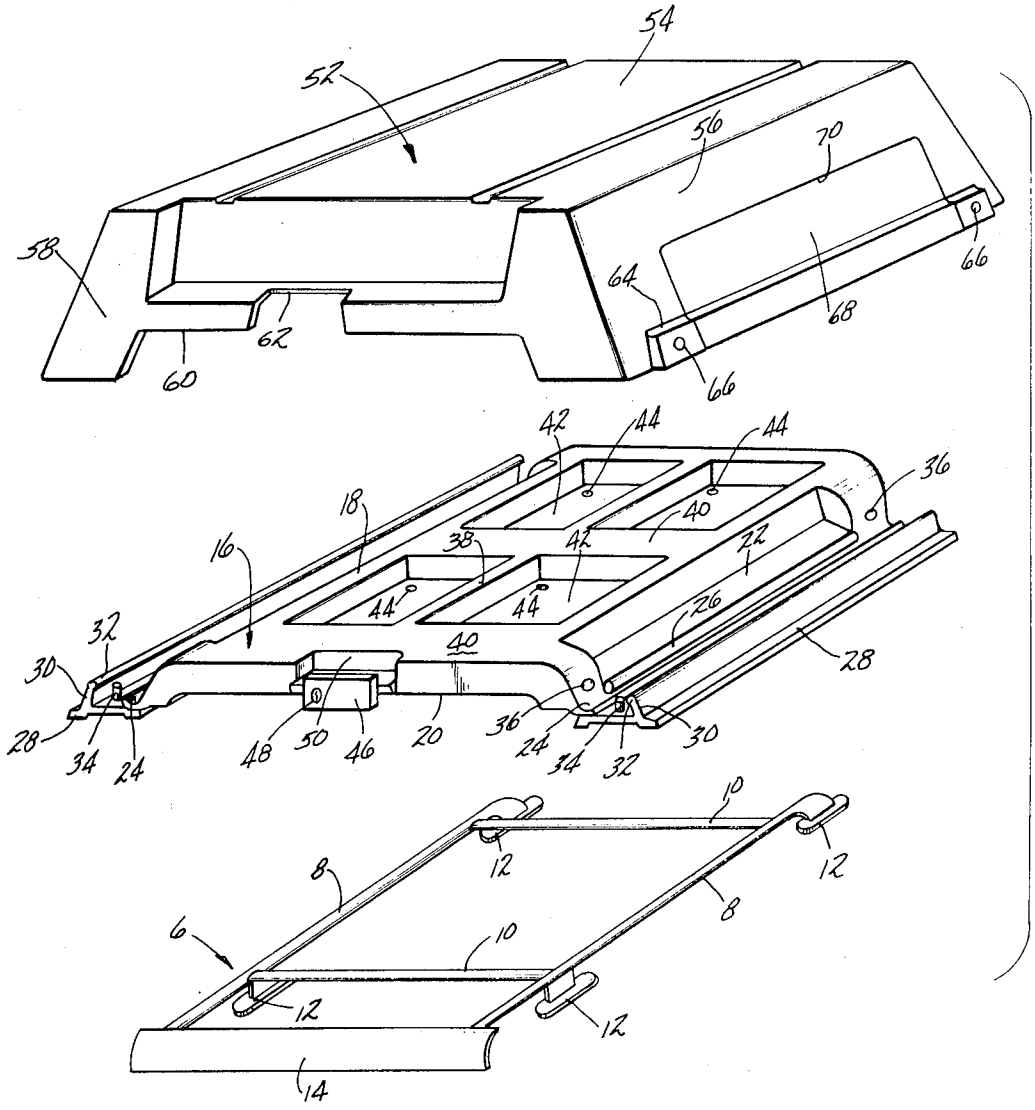
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Primary Examiner—Robert J. Spar
Assistant Examiner—Jerold M. Forsberg
Attorney, Agent, or Firm—Donald R. Motsko; H. Samuel Kieser; William W. Jones

[57] **ABSTRACT**

A tent structure having folding tubular supports which, when collapsed, are contained within a carrier member along with the tent fabric. The supports are unfolded to an erected condition exterior of the container to provide a tent of considerably greater size than the carrier member. The carrier member serves as a top for the mid portion of the tent and the entire structure, when folded into its collapsed condition can be mounted on the roof of a car for transporting. When erected, the tent stands free of the car so that the latter can be driven about without the tent. A carrier for the tent structure is shown which is securable to the roof rack on an automobile. The carrier may be used to support other articles on the auto roof.

5 Claims, 13 Drawing Figures



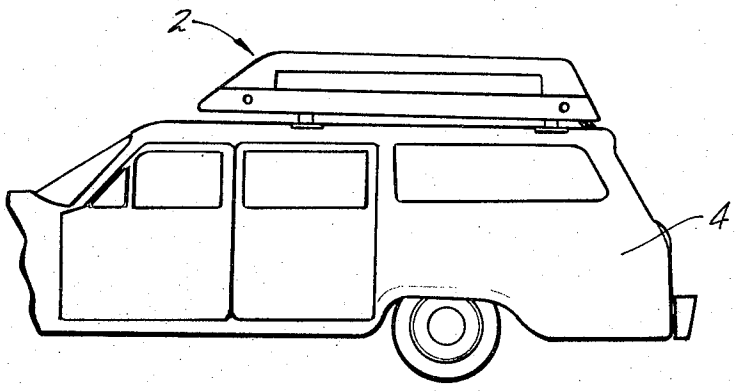
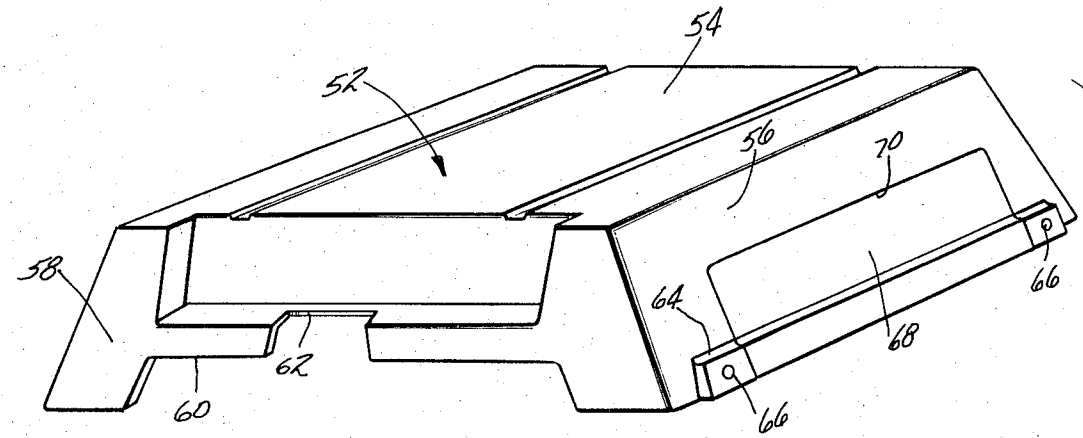
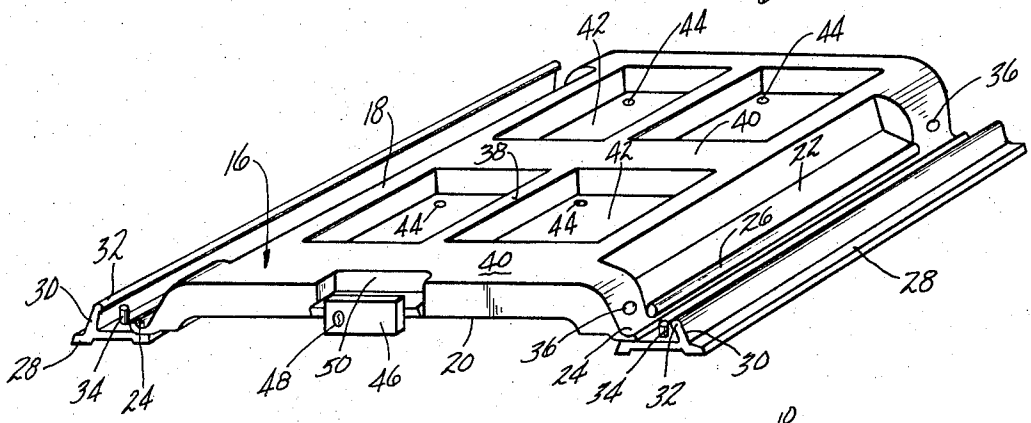

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FIG-1


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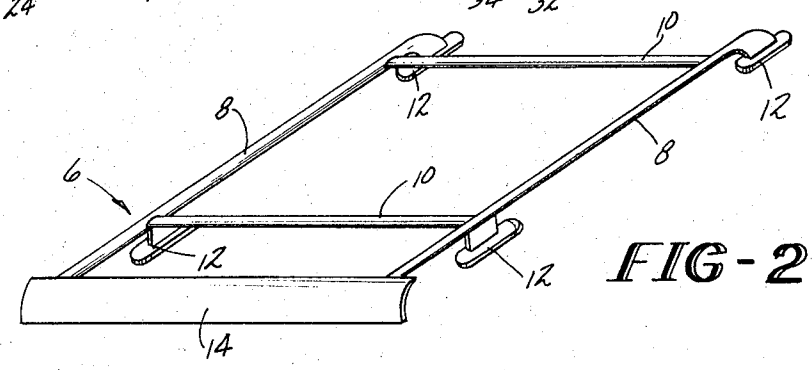

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FIG-2

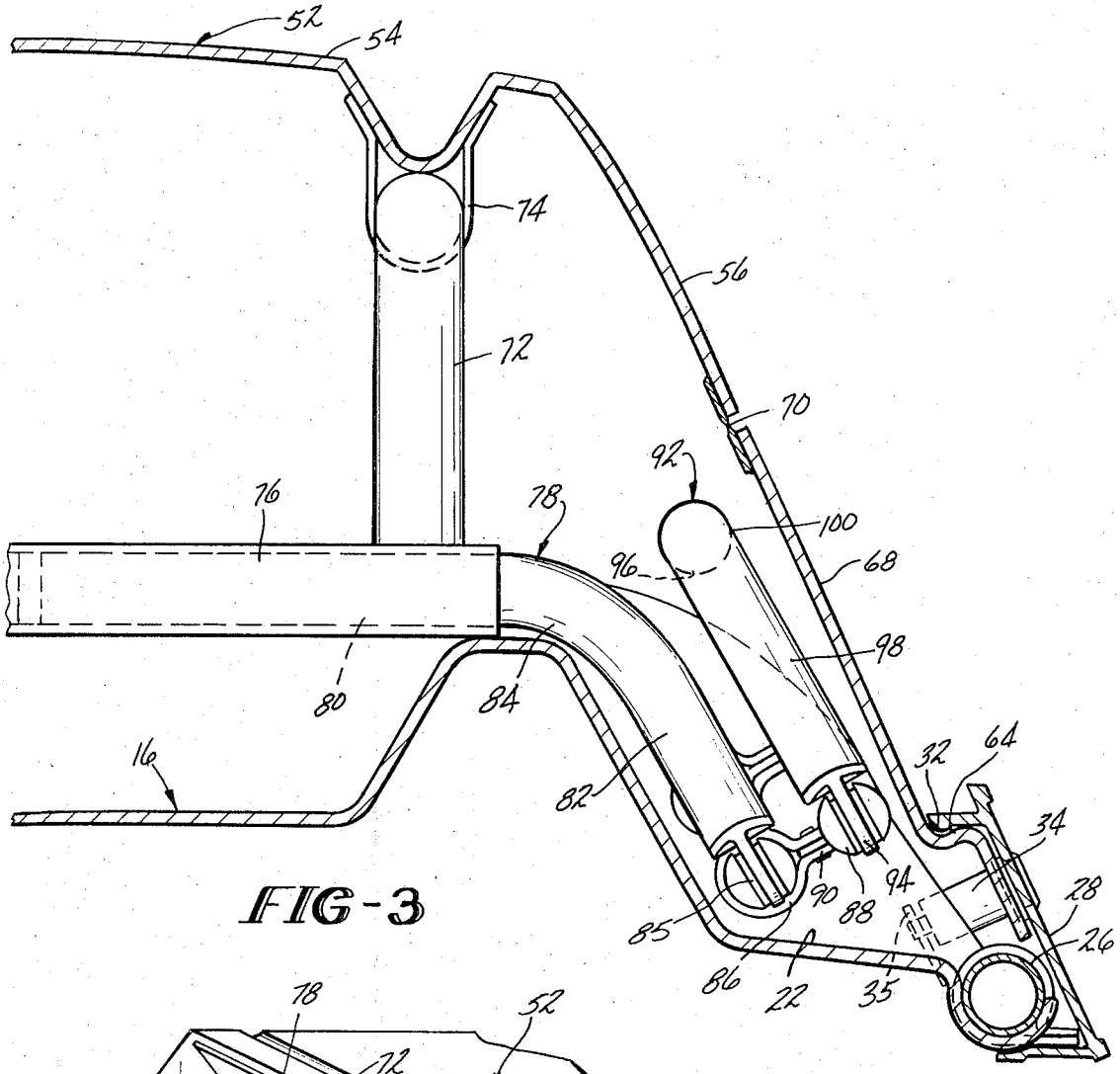

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FIG-3

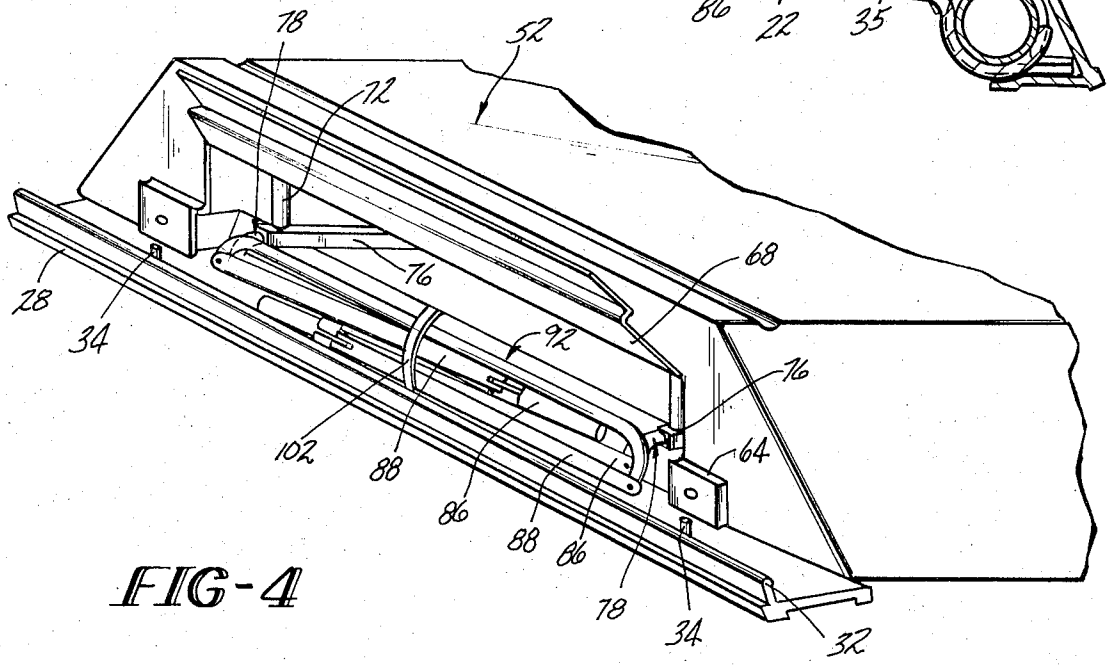

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FIG-4

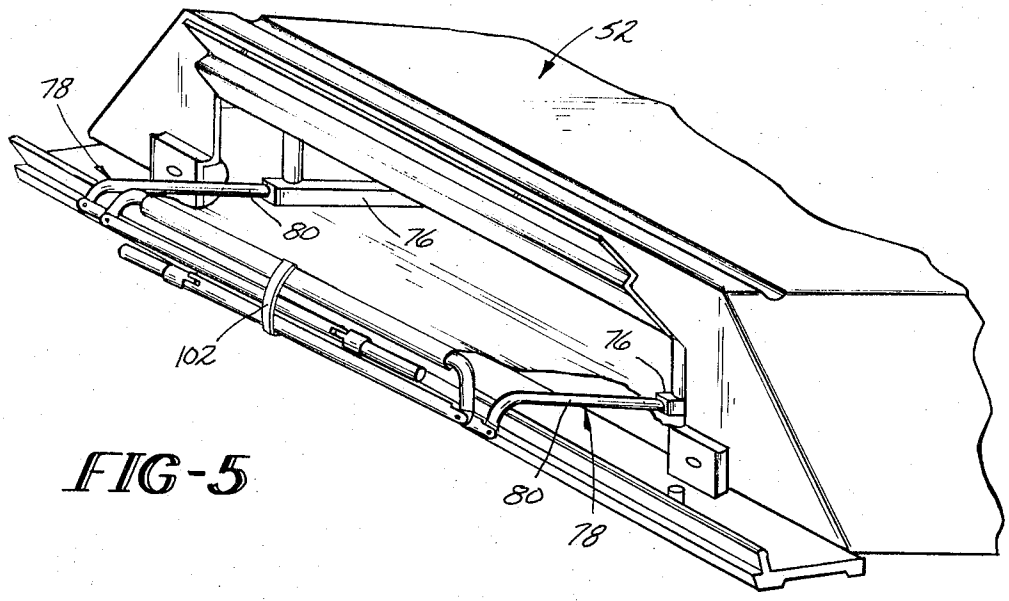


FIG-5

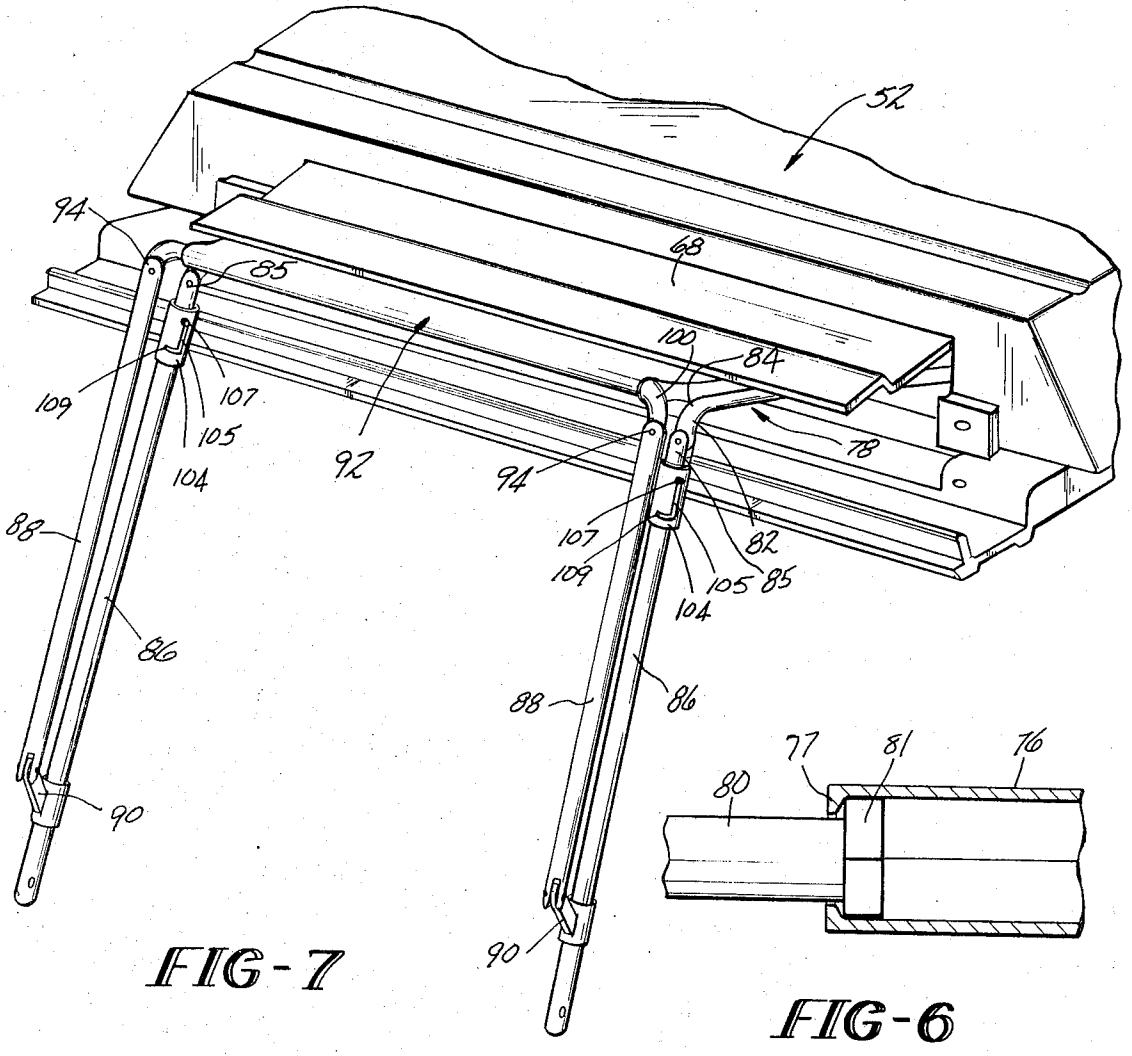


FIG-7

FIG-6

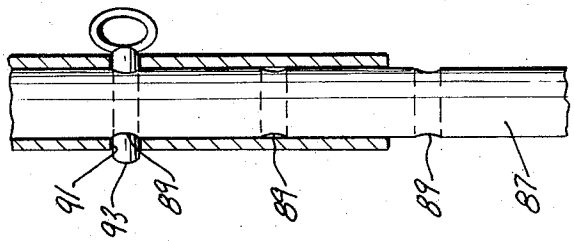


FIG-8

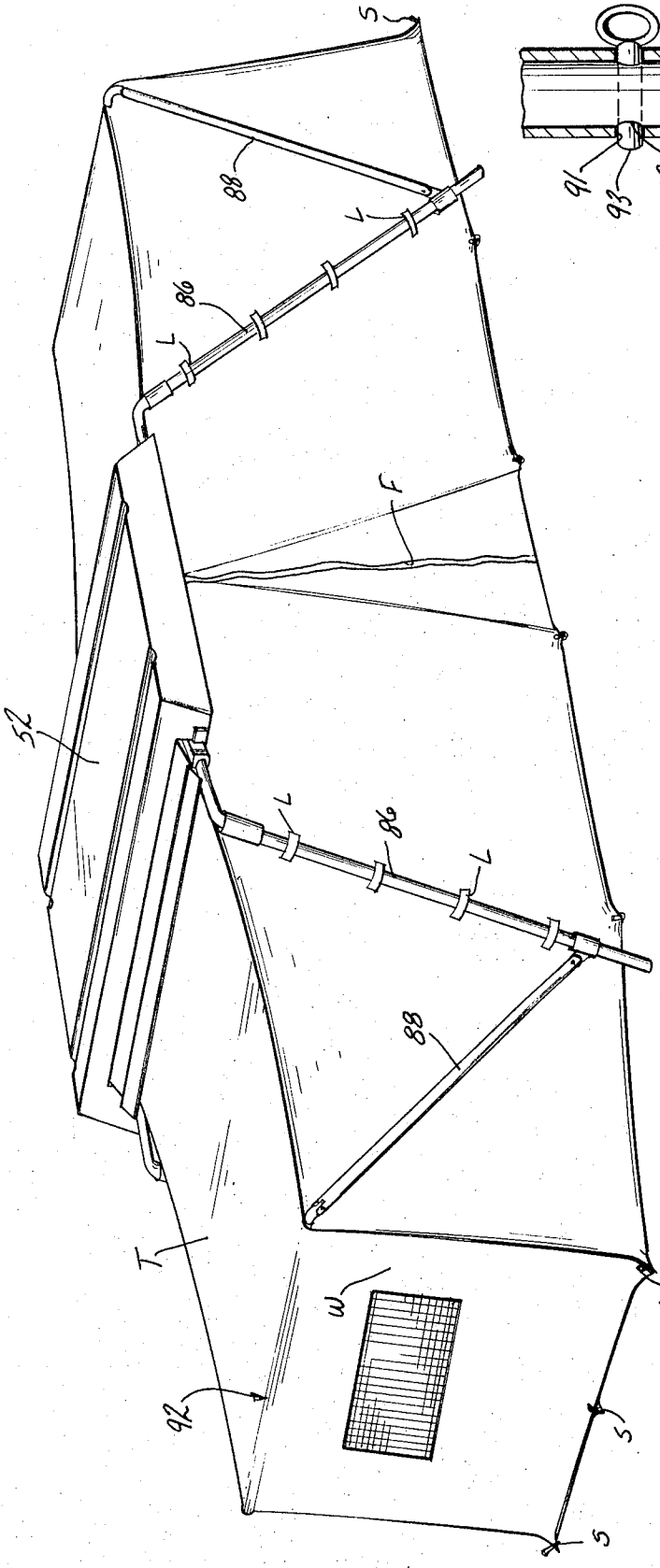


FIG-10

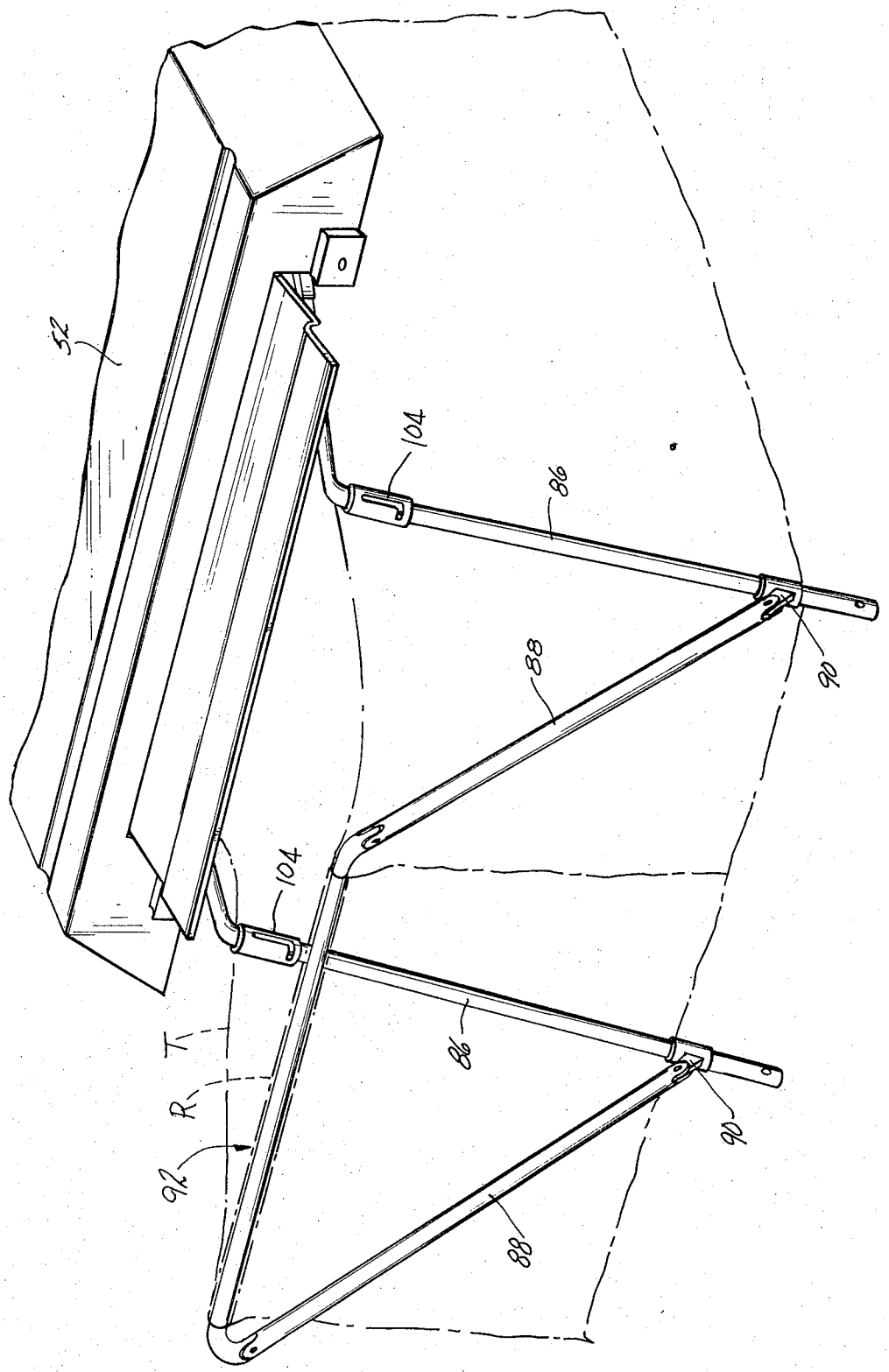


FIG-9

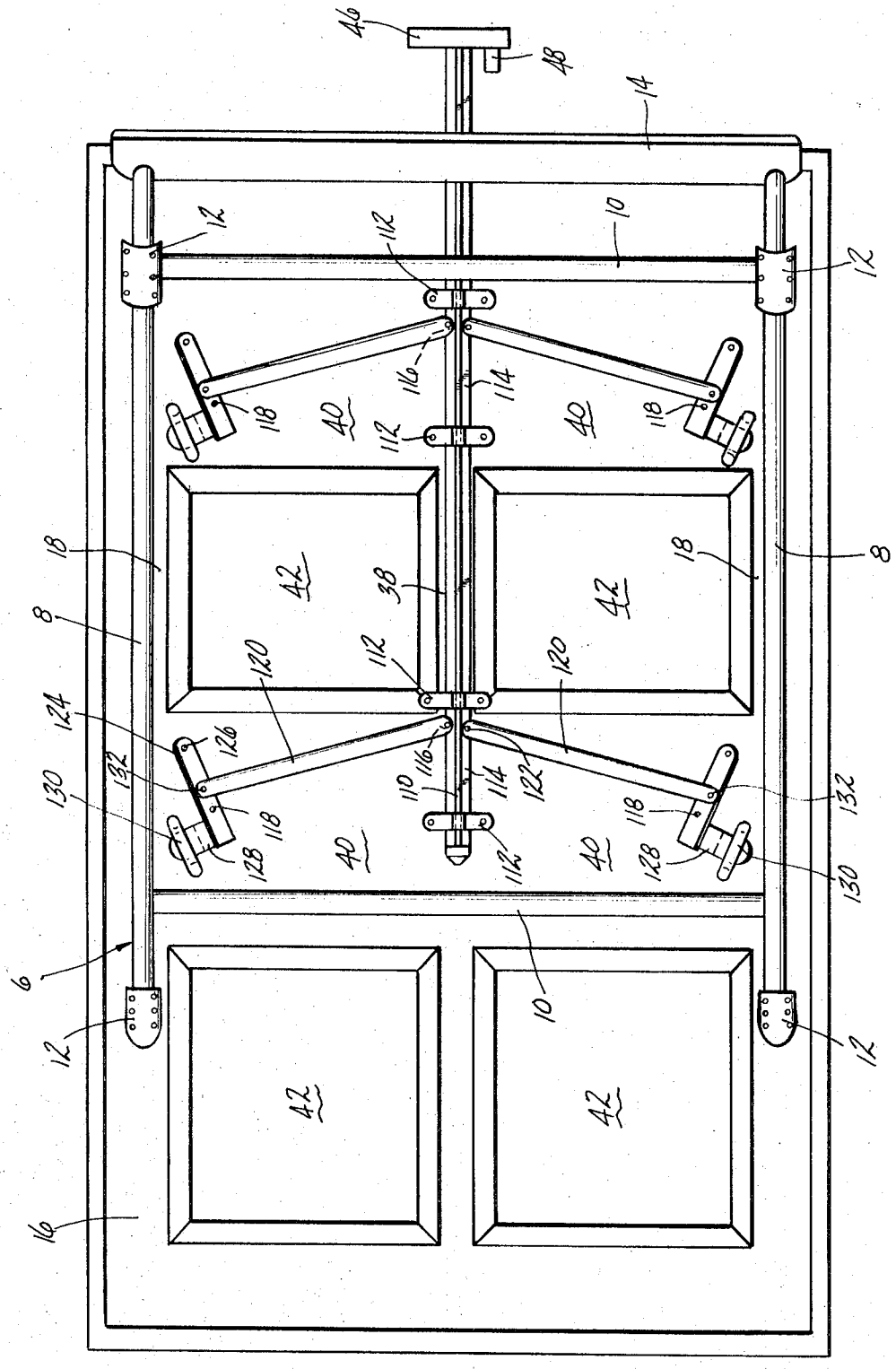

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FIG-11

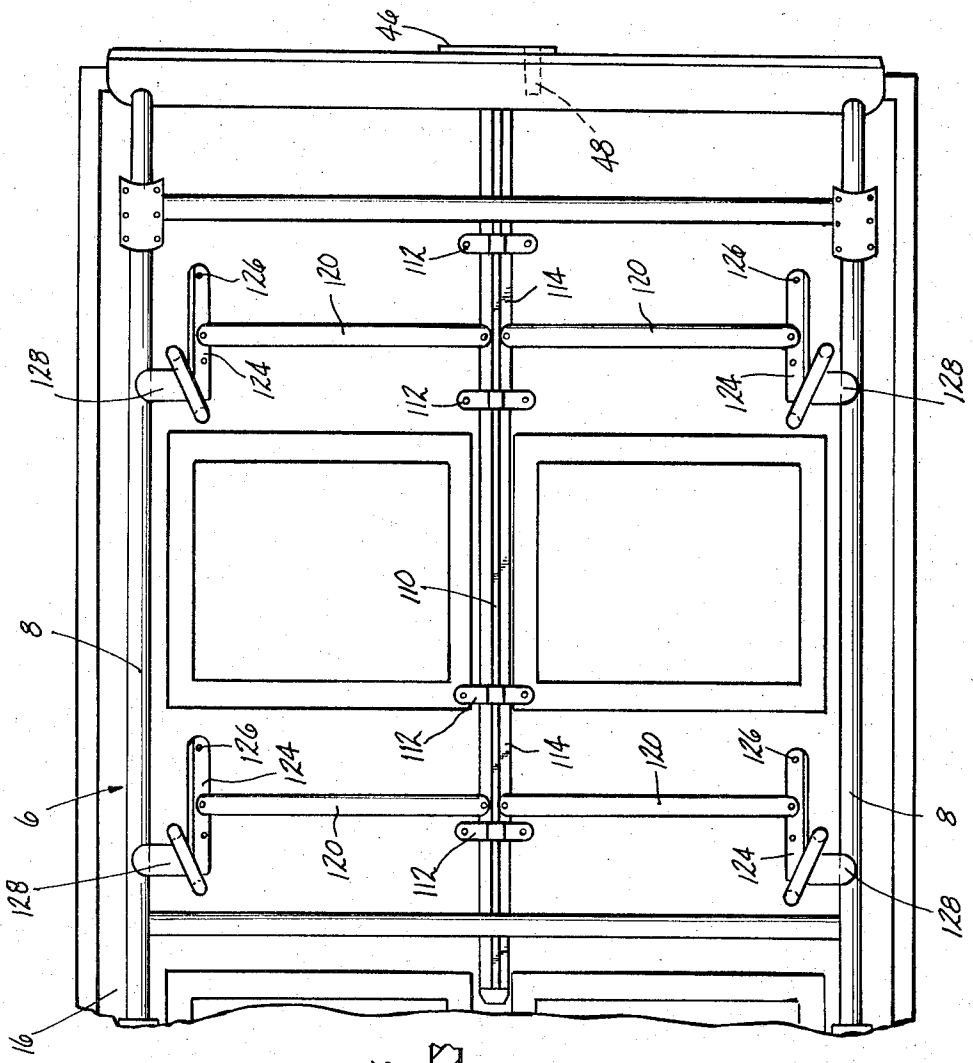

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FIG-12

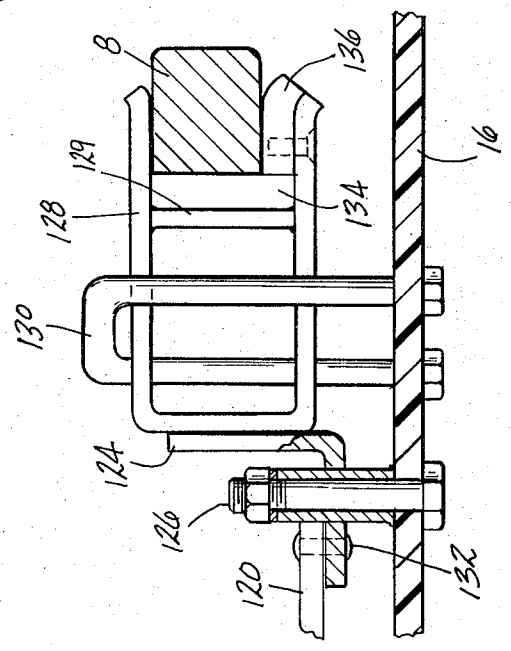

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FIG-13

CARRIER MOUNTABLE ON THE ROOF RACK OF A CAR

This invention relates to a shelter in the form of a tent structure which can be folded into a collapsed condition which takes up a minimum amount of space and which may be transported on the roof of an automobile. The tent structure can, when desired, be unfolded into an erected condition so as to stand on the ground free and clear of the automobile so that the latter can be driven about with no problem.

Tent structures which can be stored in a compact condition and secured to the roof of a car for transportation are generally known in the prior art. Such tents fall into two general catagories, those which when erected remain secured to the car so that the latter forms a part of the tent and cannot be driven after the tent is set up, and those which are erected separately from the car so that the latter can be freely driven after the tent is set up. Patents disclosing tents of the second general category include U.S. Pat. Nos. 3,010,462, issued Nov. 28, 1961 to Charles C. Barber; 3,254,657, issued June 7, 1966 to Raymond Reger; 3,255,768, issued June 14, 1966 to Lyall L. Lowe; 3,289,684, issued Dec. 6, 1966 to Lyall L. Lowe; 3,368,574, issued Feb. 13, 1968 to Louise J. Yates et al; 3,431,922, issued Mar. 11, 1969 to William R. Kilbride; 3,628,825, issued Dec. 21, 1971 to Mitchell Hannoosh; 3,649,063, issued Mar. 14, 1972 to Turner Stark; and 3,655,077, issued Apr. 11, 1972 Lyall Lowe. It is to the latter general category of tents that the tent of this invention belongs.

The car top tents of the prior art which are transported on the roof of the car and erected of connection to or dependence upon the car are conventionally stored in a rigid housing member of plastic, fiberglass, or the like. When the tent is erected, the housing member usually forms a part of or all of the roof portion of the tent. Since the housing must readily fit on the roof of the automobile for transporting, the size of the housing is somewhat limited. For example, the housing can be about nine feet long and five feet wide, but cannot be much larger and still fit safely on the car roof. Since the housing serves as the roof of the erected tent, the tent itself is thereby limited as to size, and cannot accommodate more than three or four persons at the most.

Various solutions have been offered toward enlarging the size of this type of tent, such as sloping the side walls of the tent outwardly from the side edges of the roof-housing when the tent is erected; and providing a housing which consists of two components of about the same size which are hinged together like a clamshell, and which open into a roof structure of about twice the size of the conventional housing. These solutions have somewhat relieved the crowded condition of the tent interior, but have not readily increased its occupancy capacity.

The tent structure of this invention contemplates the use of a rigid housing member which can be mounted on the top of an automobile for transport and which is erected free of attachment to the auto. Tubular tent supporting members are stored within the housing member along with the tent fabric when the tent is in its compact or storage condition. The tubular members are designed to be pulled out laterally of the housing member while the structure is on the roof of the auto

and preparatory to erecting the tent. This provides a first lateral extension in opposite directions of the roof area of the tent, when erected. The tubular members are then sequentially lowered to the ground from their laterally extended positions, the lowered members serving to support the tent on the ground, and being of sufficient length that, when lowered to the ground, they serve to displace the housing member upwardly away from and free of the roof of the car. After the lowered members are properly positioned on the ground, the car can be driven out from under the tent. Others of the tubular members, which are secured to the lowered members, are swung laterally further out from the lowered members and housing to further laterally expand the size of the tent. The other swung members are secured to the tent fabric and pull the latter outwardly away from the housing. The fabric is then staked to the ground and secured to the tubular members, which form external supports for the tent. By using this form of tubular support structure, a tent of about 9 feet by 19 feet can be erected from a housing which is about 9 feet by 5 feet. The roof of the tent can be positioned about 7 feet from the ground at its central portion formed by the housing, and the tent can readily accommodate six to eight people comfortably.

It is, therefore, an object of this invention to provide a camping tent structure which can be stored in a relatively compact form and erected into a tent having considerable living area.

It is another object of this invention to provide a tent structure of the character described which can be transported in its stored condition on the roof of an automobile and erected from the auto roof free of connection to the auto.

It is yet another object of this invention to provide a tent structure of the character described which includes a rigid housing member in which the tent structure is stored and which forms a portion of the roof of the erected tent.

It is a further object of this invention to provide a tent structure of the character described having folding tubular support members which can be folded into a compact storage configuration and expanded into an enlarged erected configuration.

These and other objects and advantages of the tent structure of this invention will become more readily apparent from the following detailed description of a preferred embodiment taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a side fragmented elevational view of a preferred embodiment of the tent structure of this invention shown mounted on the roof rack of a station wagon;

FIG. 2 is an exploded perspective view of the auto roof rack, mount base and tent structure-containing pod of FIG. 1;

FIG. 3 is a fragmented vertical sectional view taken through the mount base and pod showing the manner in which the tent tubular supports or poles are hinged and contained within the pod for transport or storage;

FIG. 4 is a fragmented perspective view of the tent structure showing how the folded stored supports are exposed preparatory to erecting the tent;

FIG. 5 is a fragmented perspective view similar to FIG. 4 but showing the still folded supports as they appear when pulled out of the pod as the tent is being erected;

FIG. 6 is a sectional view taken through the guide member secured to the pod showing how the laterally slidable support is prevented from exiting the guide when pulled out to the position shown in FIG. 5;

FIG. 7 is a fragmented perspective view similar to FIG. 5, but showing how the vertical support poles are pivoted down to contact the ground so that the pod will be suspended on the vertical poles above the ground and the car can be driven out from under the pod;

FIG. 8 is a sectional view taken through the lower portion of the vertical poles showing how their length may be increased by the use of telescoping inserts to further elevate the roof of the tent above the ground;

FIG. 9 is a fragmented perspective view similar to FIG. 7, but showing how further lateral pole members are pivoted outwardly away from the vertical poles to further increase the size of the tent, the tent fabric itself being shown in phantom;

FIG. 10 is a perspective view of the tent structure as it appears when fully erected;

FIG. 11 is a bottom plan view of the auto roof rack and pod-supporting base showing the structure by which the base is secured to the roof rack, the structure being shown in its release condition;

FIG. 12 is a fragmented bottom plan view similar to FIG. 11 but showing the securing structure in its securement condition; and

FIG. 13 is an elevational view partially in section of the portion of the securing structure which engages the side bar of the auto rack.

Referring to FIG. 1, the tent structure is denoted generally by the numeral 2 and is shown in its collapsed storage or transporting condition. The structure 2 is shown mounted on the roof rack of a station wagon 4 for transport to the camping site.

Referring to FIG. 2, an exploded perspective view of the tent structure and auto roof rack is shown. The roof rack 6 includes a pair of longitudinally extending side bars 8 connected to each other by laterally extending front and rear cross braces 10 and secured to the top of the auto by brackets 12 in a conventional manner. A wind deflector 14 of conventional construction is secured to the rear end of the side bars 8.

A base or module-supporting member 16 is mounted on and secured to the roof rack 6, the member 16 being formed preferably from a sheet of plastic or fiber glass material. The member 16 is formed with a pair of longitudinally extending downwardly opening side channels 18 which overlie the side bars 8 of the roof rack, and the rear face of the member 16 is recessed as at 20 to closely overlie the wind deflector 14. Thus the base overlies the auto roof rack and fits snugly against the top of the auto presenting a low profile thereon. The member 16 is also provided with a pair of upwardly opening recesses or pockets 22 the purpose of which will be set forth in greater detail hereinafter. The lateral side edges of the member 16 form a curved upwardly open lip 24 in which there is secured a rod 26 to which is hinged a locking plate 28. The plate 28 includes a flange 30 with a protruding rib 32, the purpose of which will be set forth in greater detail hereinafter. Each plate 28 carries a pair of lock mechanisms 34 which can pass through openings 36 in the member 16 for securement to metal plates (not shown) mounted on the underside of the member 16. The member 16 is formed with a central longitudinally extending downwardly open channel 38 and laterally extending downwardly open channels 40 which house the mechanism used to lock the member 16 to the roof rack. Details of the locking mechanism will be set forth hereinafter. The member 16 also includes four recesses 42 which may be used for storing blankets, sleeping bags, cooking gear and the like. Water drainage openings 44 are provided in each recess 42. A locking mechanism-operating handle 46 is disposed at the rear face of the member 16, the hanlde 46 carrying a lock 48 which is securable to a metal plate (not shown) attached to the underside of the member 16. A recess 50 is provided on the rear face of the member 16 to permit the handle 46 to be grasped manually.

A pod 52 of plastic, fiberglass or the like is provided to house the tent fabric and support poles. The pod 52 includes a top wall 54, downwardly sloping side walls 56, and downwardly sloping end walls 58. The rear end wall 58 is recessed as at 60 to snugly overlie the wind deflector 14, and is also recessed as at 62 to provide access to the base handle 46. Each side wall 56 is formed with an outwardly projecting shoulder 64 for engagement with the plate flange rib 32 so that the pod 52 can be secured to the base member 16. A pair of openings 66 are formed in each sidewall 56 for passage of the locks 34. A door 68 is formed in each side wall 56 and is hinged thereto along hinge line 70 for upward and outward pivoting movement.

Referring now to FIG. 3, the manner in which the pod 52 is secured to the base member 16 is shown as is the stored, folded condition of the pole members. To lock the base 16 to the pod 52, the plate 28 is pivoted upwardly about the tube 26 until the rib 32 engages the shoulder 64 at which time the locks 34 engage the respective metal plates 35 which are mounted on the base 16. A pair of generally U shaped tubular members 72 (one shown) are secured to the pod 52 by means of brackets 74. A pair of laterally extending tubes 76 (one shown) are secured to free ends of each of the tubes 72, the tubes 76 preferably having a square cross-sectional configuration. The tubes 72 and 76 thus serve to reinforce the pod 52 in addition to providing mounts for the tubular support poles of the tent. At each open end of the lateral tubes 76 there are telescopingly nested laterally slidable tubular members 78 (one shown). The member 78 is shown in FIG. 3 in its fully telescoped storage condition. Each member 78 includes a generally horizontal straight portion 89 which, when stored, is telescoped inside of the tube 76. The horizontal straight portion 80 is withdrawn from the tube 76 when the tent is erected, as will be set forth in greater detail hereinafter. The tubular member 78 also includes a downwardly and outwardly extending terminal straight portion 82 which is connected to the horizontal straight portion 80 by an intermediate curved portion 84. At the terminal part of the straight portion 82 there is disposed a hinge 85 which serves to hingedly connect the tubular member 78 to a pole 86 which is disposed in the horizontal when the structure is stored and which pivots down to a generally vertical position when the tent is erected, as will be explained in greater detail hereinafter. The pole 86 is also connected to one end of an eave pole 88 by means of a hinge 90, and the eave pole 88 has its other end connected to a tubular eave cross member 92 by means of a hinge 94. The tubular cross member 92 includes a longitudinally extending straight portion 96 and terminal straight portions 98 connected to the straight portions 96 by means of intermediate

curved portions **100.** As will be readily appreciated from FIG. **3** and the following figures, the tubular tent supports **78, 86, 88** and **92** are compactly folded up for storage and are positioned in the base recess **22** behind the pod door **68** when the tent structure is stored or transported.

Referring now to FIGS. **4–10,** the manner in which the tent is erected is disclosed. To begin erecting the tent, the locks **34** are unlocked and the plates **28** are swung outwardly and downwardly away from the pod **52** to disengage the plate rib **32** from the pod shoulder **64.** This frees the pod **52** to be lifted upwardly free of the base member **16,** which is secured to the roof rack of the automobile (not shown). The door **68** can then be pivoted upwardly and outwardly about its hinge **70** to expose the folded tent poles. The folded poles may be held together by a clip **102** to prevent them from accidently dropping about their respective hinges prematurely whereby the auto might be hit. The folded poles are then grasped and pulled outwardly so as to cause the straight portions **80** of the tubular members **78** to slide out the square tubes **76.** This causes the folded poles to be laterally displaced from the sides of the pod **52** and from the sides of the automobile. Referring to FIG. **6,** the manner in which the poles **78** are prevented from being pulled completely free of the square tubes **76** is shown. Each pole **78** has secured to the innermost end of its straight section **80** a square block **81.** The corners of the square tube **76** are turned down as at **77** to engage the blocks **81** when the poles **78** are fully extended from the square tubes **76.**

The clip **102** is then removed from the folded poles and the vertical poles **86** and **88** are swung down about their respective hinges **85** and **94** until the poles **86** touch the ground. The poles **86** are longer than the combined height of the automobile and base member, so that when the bottom of the poles **86** touch the ground, the pod **52** will be lifted upwardly free of the base member **16.** When the tent structure is erected each corner of the pod **52** will be independently lifted from the base member **16** as the appropriate pole **86** is swung into proper position. On each of the poles **86,** there is mounted a sleeve **104** which can be slid up over the hinges **84** to lock the latter in place and stabilize the unfolded poles. The terminal straight portions **82** are provided on the poles **78** respectively to ensure that the sleeves can cover the hinges sufficiently for locking purposes. The sleeves **104** are held in the locking position by means of a bayonet slot **105** in the sleeves **104,** in which slot **105** there is disposed a pin **107** secured to the poles **86.** After the sleeve **104** is slid over the hinge **84,** the sleeve **104** is twisted to position the pin **107** in the lateral portion **109** of the bayonet slot **105,** as shown in FIG. **9.**

Reference is made to FIG. **8** wherein there is disclosed means for elongating the effective length of the poles **86** so as to raise the pod **52** higher off of the ground when the tent is finally erected. Pole inserts **87** are telescopingly housed within the poles **86** and can be slid out of the latter when the poles **86** are dropped to the ground. The inserts **87** are provided with aligned pairs of longitudinally offset openings **89** for adjustment purposes should the ground on which the tent is erected be uneven. The poles **86** are also provided with a pair of aligned openings **91.** When the openings **91** are brought into alignment with a desired pair of insert openings, a pin **93** is passed through the aligned openings **89** and **91** to hold the insert **87** projecting from the pole **86.** It will be obvious to those skilled in the art that provision other than the pin and aligned openings disclosed can be made for increasing and adjusting the height of the tent without departing from the spirit of the invention.

Referring now to FIGS **9** and **10,** erection of the tent is continued after the tent is free of the car. The eave cross pole **92** is pulled outwardly away from the pod **52** causing the eave poles **88** to pivot outwardly about the hinges **90.** The cross pole **92** preferably passes through a sleeve R stitched in the tent fabric T so that by pulling the pole **92** outwardly, the tent fabric is caused to deploy properly. Alternatively, other means may be used to secure the tent fabric to the eave cross pole **92.** The lower edge of the tent sidewall W is staked to the ground as at S in a manner which holds the poles **92** and **88** in the proper position shown in FIG. **10.** The tent fabric T includes loops L which are tied around the poles **86** and a tent flap F is provided for access to the interior of the tent. Of course, the upper portions of the tent fabric are secured to the pod **52.** When the tent is folded up for storage, the fabric T may be temporarily secured to the interior of the pod **52** by means of hooks and eyelets (not shown) in a known manner. The tent may include a fabric floor which is stitched to the lower edges of the tent side walls.

The tent is folded up for storage by merely reversing the set-up steps described above.

Referring now to FIGS. **11** and **12,** a preferred mechanism for securing the base member **16** to roof rack **6** of the auto is shown from the underside of the base member **16.** As previously noted, the base member **16** includes longitudinally extending downwardly open side channels **18** which fit over the side bars **8** of the roof rack **6.** A central longitudinally extending downwardly open channel **38** is also provided in the base member **16,** in which channel **38** is disposed a T-shaped (in cross-section) actuating rod **110.** The actuating rod **110** is connected to the base **16** by passing through brackets **112** which are riveted to the base **16.** Thus the actuating rod **110** is free to slide longitudinally forwardly and rearwardly with respect to the base **16.** The rod **110** is shown in FIG. **11** in its rearwardmost position wherein the base **16** is not locked onto the roof rack **6.** The handle **46** is mounted on the rearward end of the actuating rod **110.**

A pair of openings **116** are provided on each side flange of the rod **110** for pivotal connection thereto of link members **120** by means of pins **122.** A plurality of levers **124** are pivotally mounted on the base **16** by means of pins **126,** the levers **124** each being provided with a U-shaped shoe **128.** U-shaped brackets **130** are mounted on the base **16** about each shoe **128** to guide movement of the latter. The outer end of each link **120** is pivotally secured to a respective lever **124** by means of a pin **132.** The links **120** can be connected to the levers at different locations **118** so as to vary the degree of outwardly pivoting movement imparted to the levers to adapt the device to different size roof racks. As shown in FIG. **11,** the base **16** is positioned over the roof rack **6** but is not secured thereto. To secure the base **16** to the roof rack **6,** the handle **46** is manually pushed forward until it enters the pod recess **62** (see FIG. **2**) and is flush with the rear wall of the pod **52.** The lock **48** is thus caused to engage a metal plate (not shown) secured to the underside of the base **16** so that

the handle **46** is locked in place. The actuating rod **110** is thus moved forward through the brackets **112.** Forward movement of the rod **110** causes the links **120** to move forward resulting in pivoting of the levers **124** about their respective pins **126.** The pivoting of the levers **124** causes the U-shaped shoes **128** to be forced against and into tight engagement with the side bars **8** of the roof rack **6,** thus securing the base **16** to the roof rack **6.** To release the base **16** from the roof rack **6,** the lock **48** is disengaged from the metal plate, and the handle **46** is pulled to the rear causing retraction of the actuating rod **110,** links **120,** levers **124** and shoes **128** to their initial positions shown in FIG. **11.**

Referring now to FIG. **13,** details of the shoes **128** are shown. It will be noted that the shoe **128** includes a clevis portion **129** in which is mounted a pad **134** of high friction material, such as rubber, which pad **134** actually engages the side bar **8** of the roof rack. An insert member **136** may be removably secured to one side of the clevis to permit modification of the shoe **128** to receive a roof rack side bars of varying thickness.

It will be readily appreciated that the tent structure of this invention provides a compact arrangement for transportation and storage while at the same time providing an erected tent having considerably greater living area than previously found in tents transported in pods atop automobiles and erected free of the autos. The tent is erected free of the auto so as to permit free use of the latter at the camp site. Provision is made for storage of the poles by hingedly connecting them together, the hinges being locked upon deployment so as to stabilize the erected structure.

Since many changes and variations of the disclosed embodiment of the invention may be made without departing from the inventive concept, it is not intended to limit the invention otherwise than as required by the appended claims.

What is claimed is:

1. A support device which is securable to an auto roof rack of the type having laterally offset bars secured to the auto roof and extending longitudinally thereof, said device comprising:

a. a substantially horizontally extending base formed from sheet-like material, said base including complementary laterally offset and longitudinally extending downwardly open side channels positioned to overlie and receive the roof rack bars so that a lower surface of the base extends below the roof rack bars;

b. a plurality of laterally open gripping means mounted within said base for lateral movement toward and away from the roof rack bars, said gripping means being operable to be moved into a locking position in engagement with the roof rack bars and a release position laterally offset from the roof rack bars;

c. an actuating rod movably mounted within said base for reciprocation in a first direction and return in the opposite direction;

d. link means operably interconnecting said actuating rod and said gripping means to cause said gripping means to be moved to said locking position when said actuating rod is moved in said first direction, and to further cause said gripping means to be moved to said release position when said actuating rod is moved in said opposite direction; and

e. at least one upwardly facing article-receiving means formed in said base.

2. The support device of claim **1,** wherein said base includes a central longitudinally extending downwardly open channel in which said actuating rod is mounted.

3. The support device of claim **2,** wherein said base includes a plurality of laterally extending downwardly open channels extending between said central channel and said side channels and in which said link means and said gripping means are mounted.

4. The support device of claim **1,** further comprising a plurality of brackets mounted on said base about said gripping means to guide movement of the latter between said locking position and said release position.

5. The support device of claim **1,** further comprising means mounted on said actuating rod for locking the latter to said base when said actuating rod is moved as far as possible in said first direction.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,861,572 Dated January21, 1975

Inventor(s) Norris, Van Haltern, Jr. & Walz

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In Column 1, line 34, after the word "erected" please insert --free--;

In Column 3, line 30, after "auto" please insert --roof--;

In Column 4, line 9, please delete "hanlde" and insert --handle--;

In Column 4, line 47, please delete "89" and insert --80--.

Signed and sealed this 15th day of July 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks