April 2, 1968 L. DOMENEGHETTI 3,375,836

FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

Filed Oct. 23, 1965 11 Sheets-Sheet 1

FIG. 1

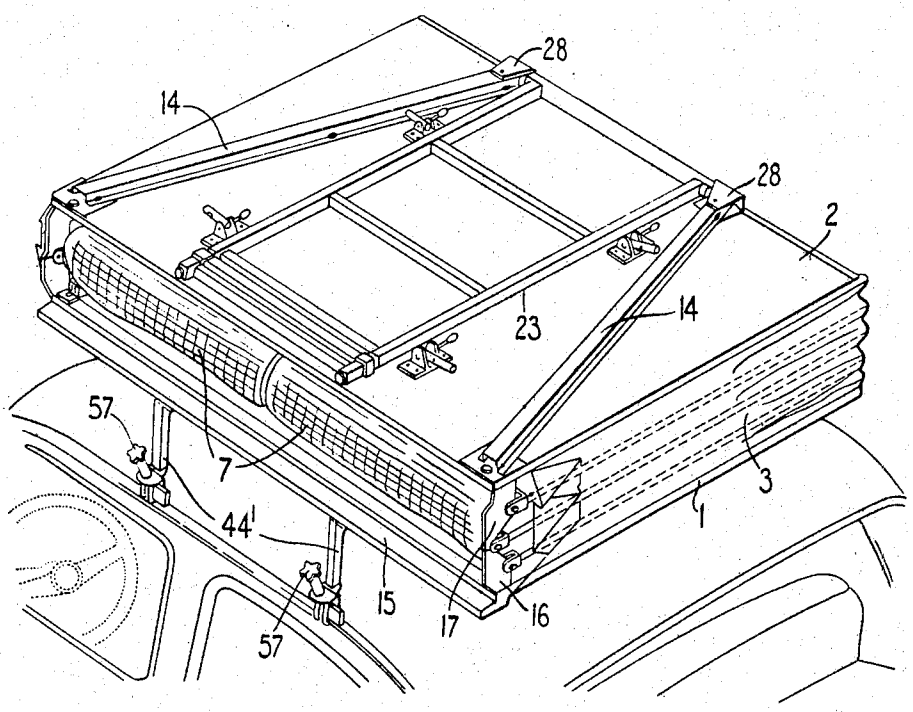
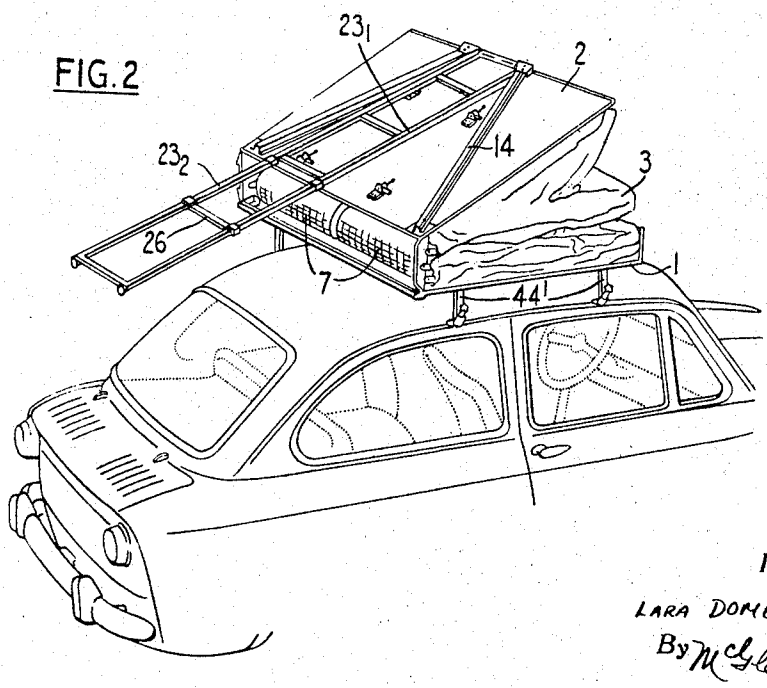


FIG. 2



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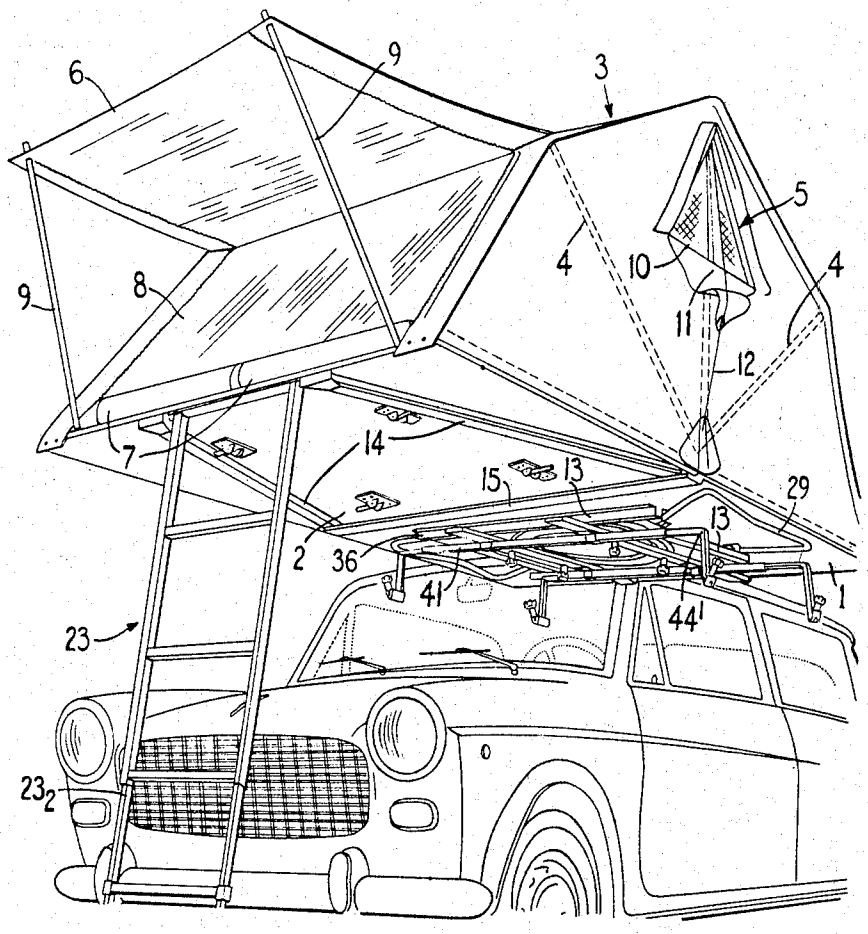


FIG. 3

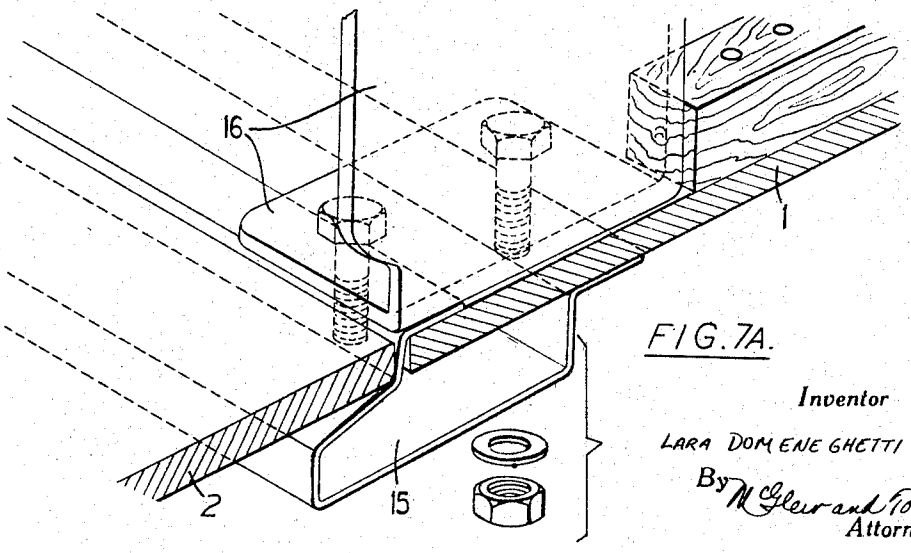


FIG. 7A.

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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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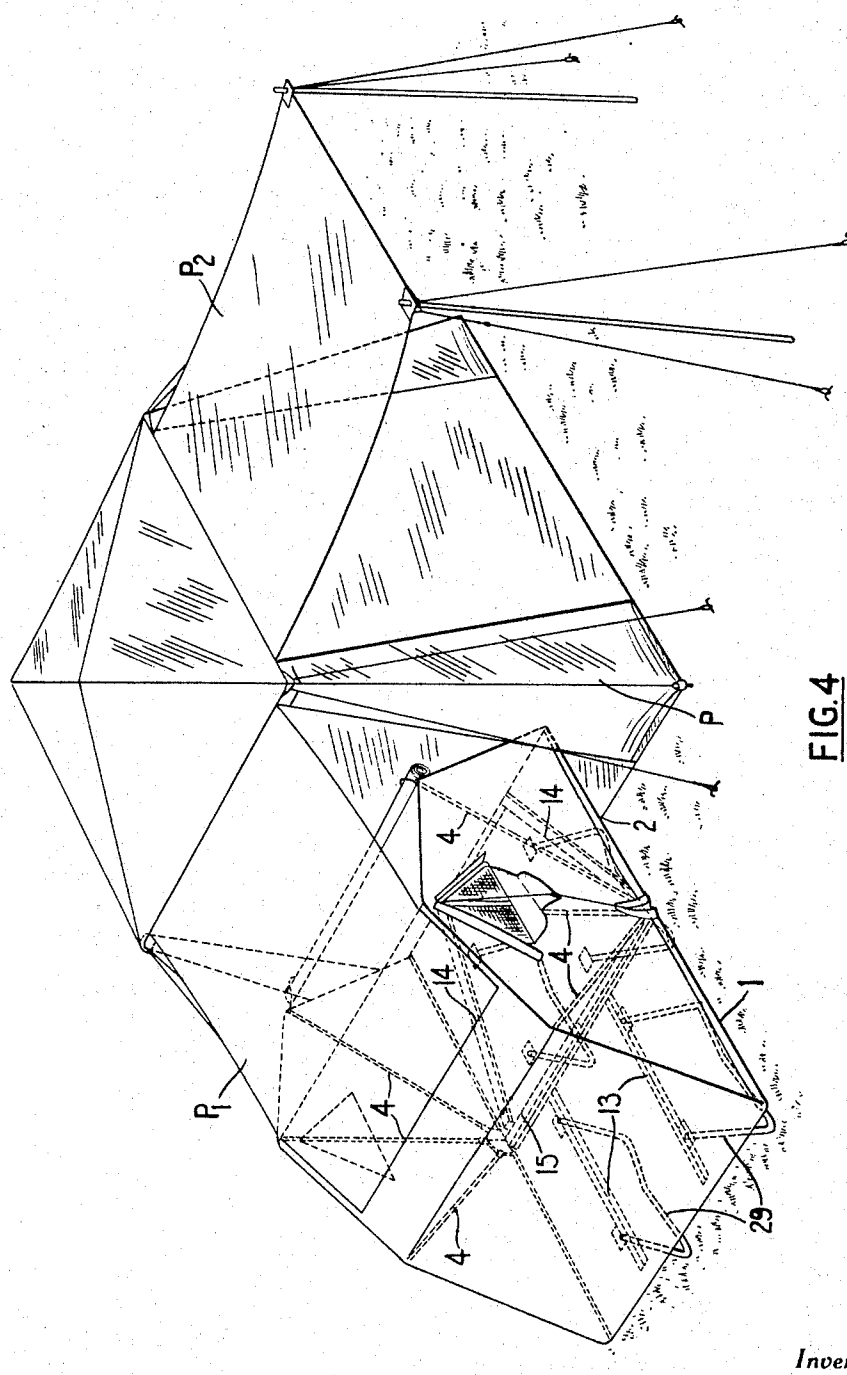


FIG.4

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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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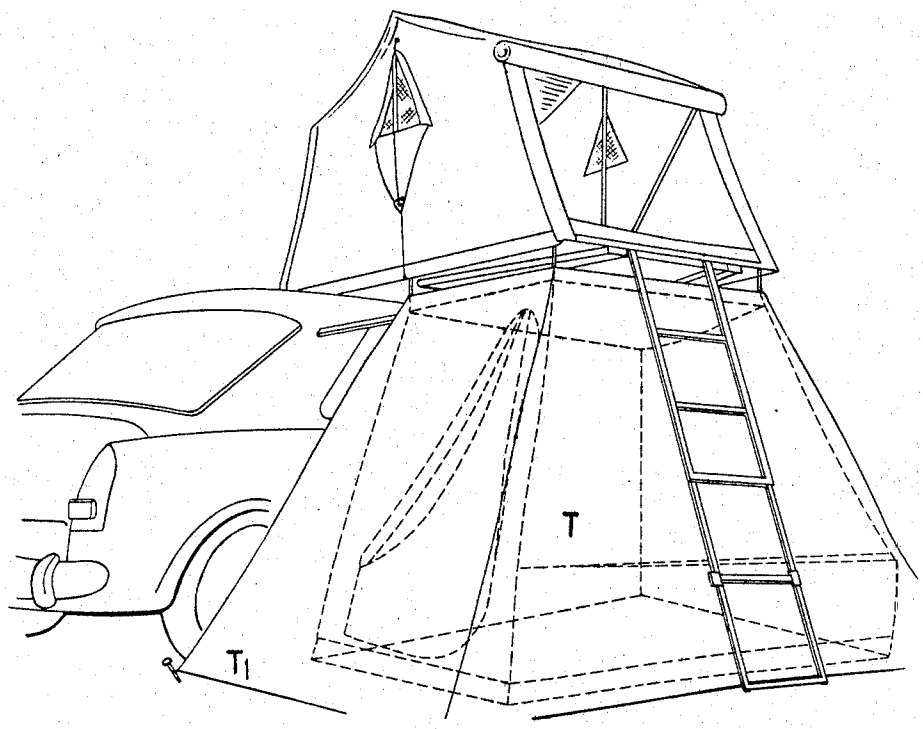


FIG. 5

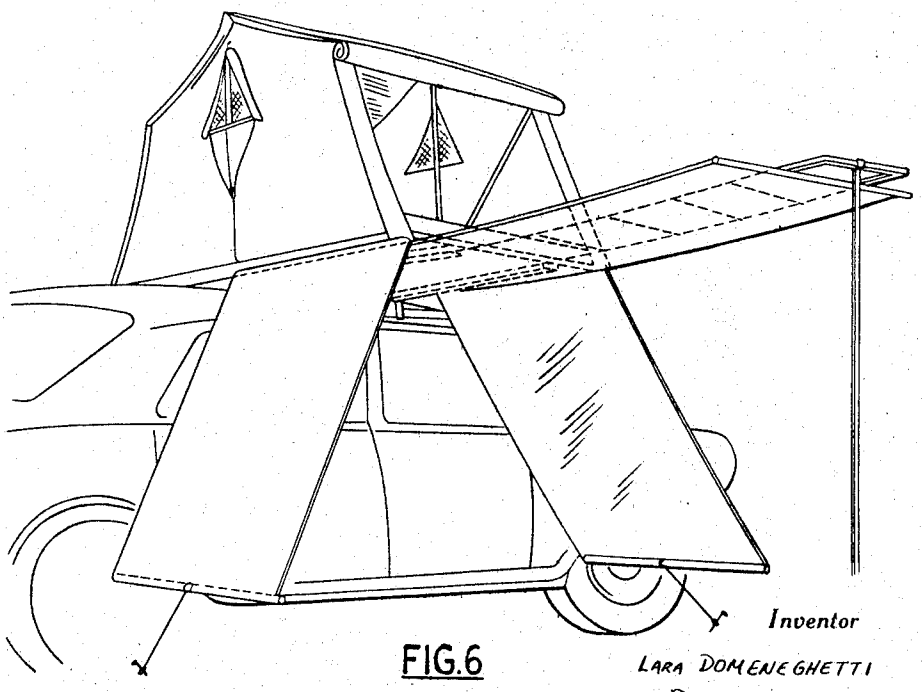


FIG. 6

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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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FIG. 8a

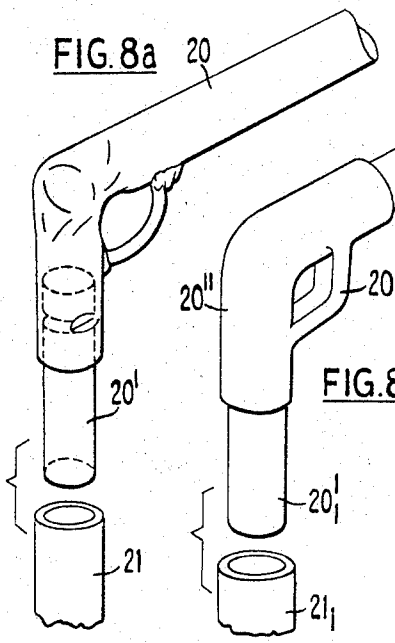
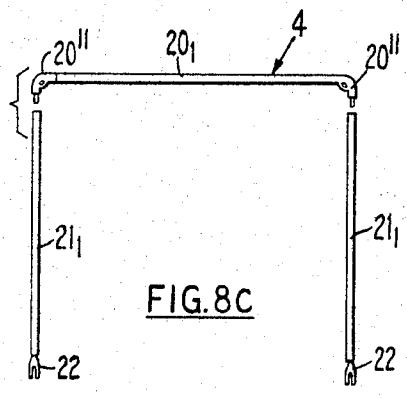


FIG. 8b

FIG. 8c



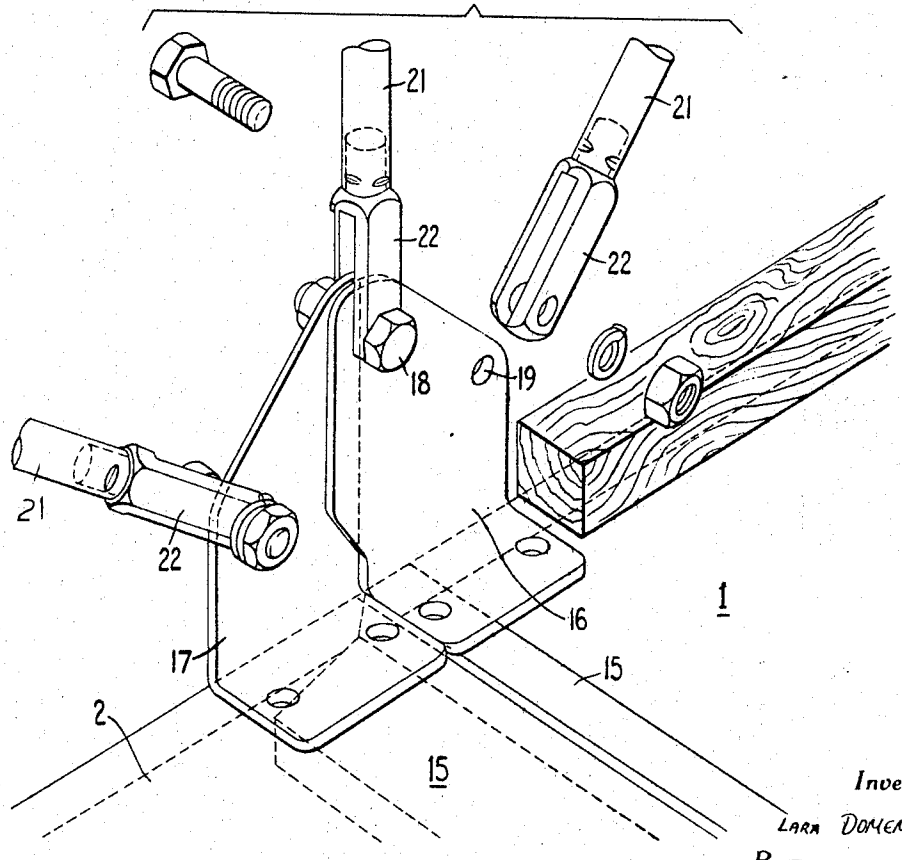


FIG. 7b

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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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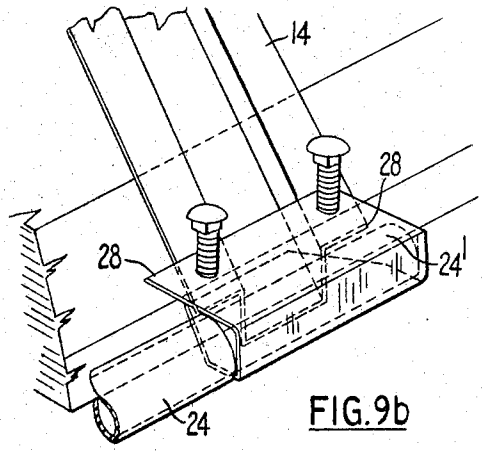


FIG.9b

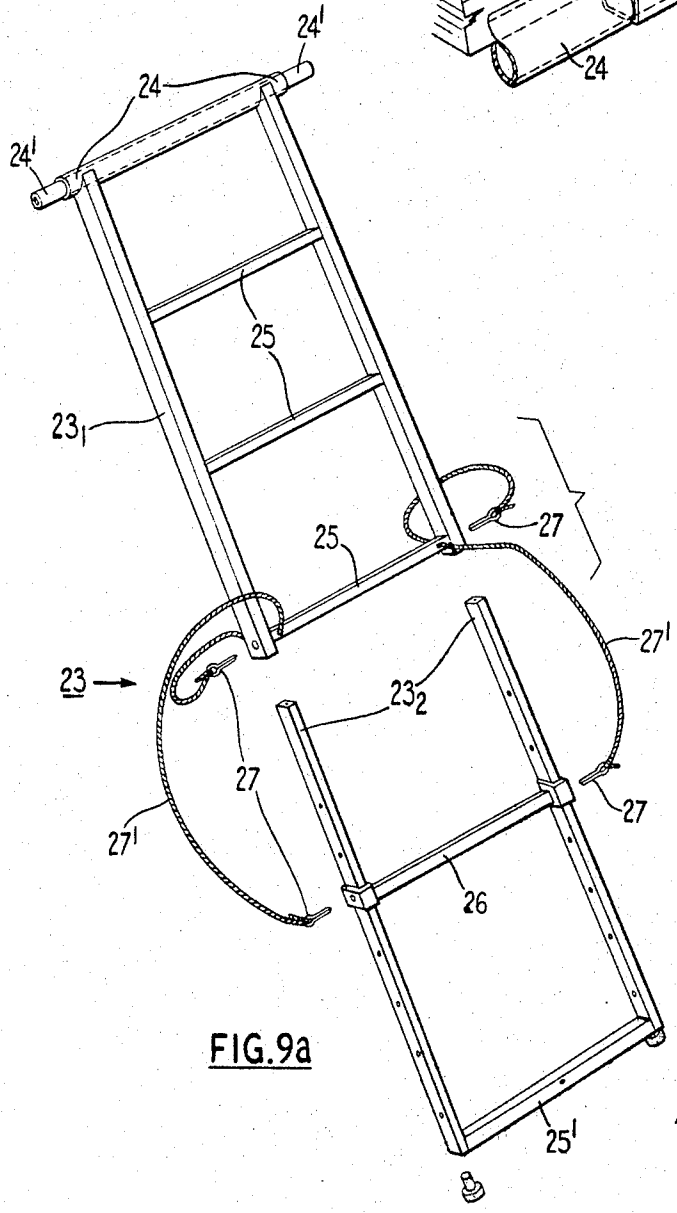


FIG.9a

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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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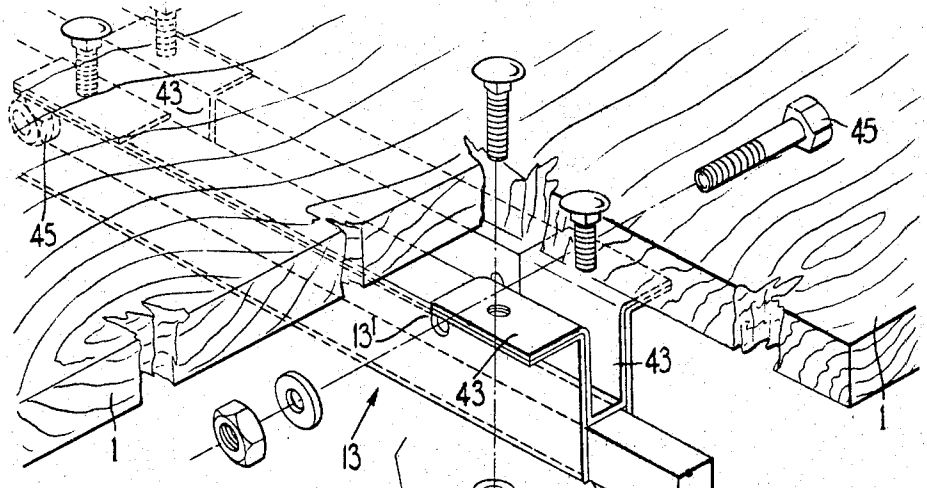


FIG. 10

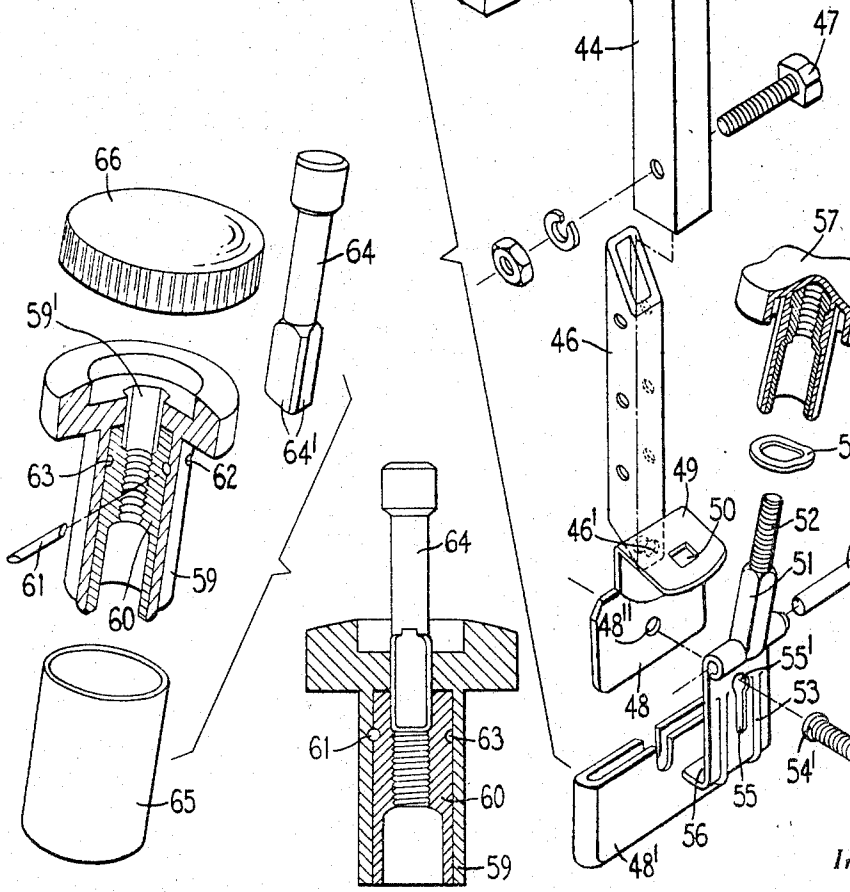


FIG. 11a

FIG. 11b

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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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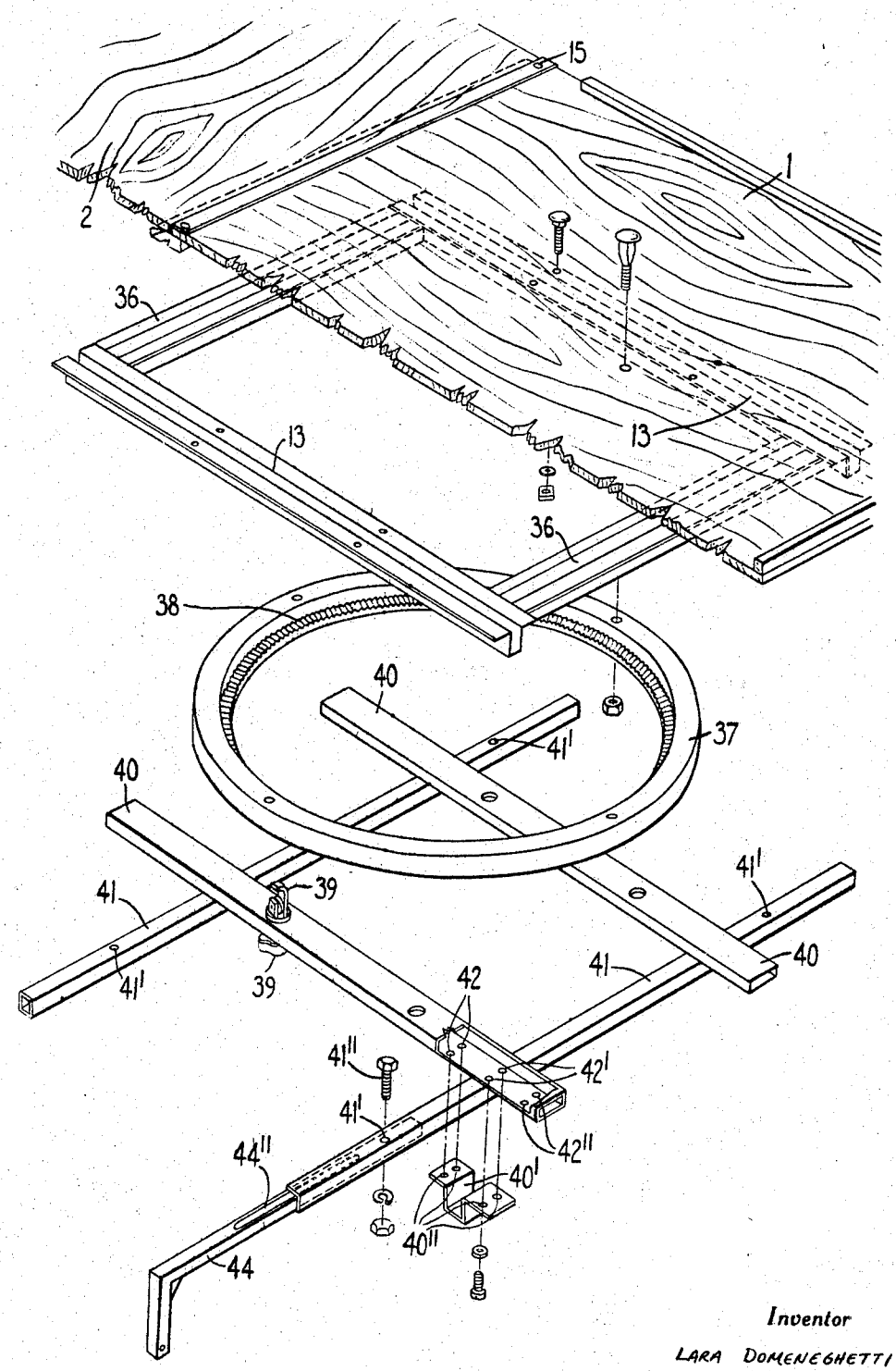


FIG.12

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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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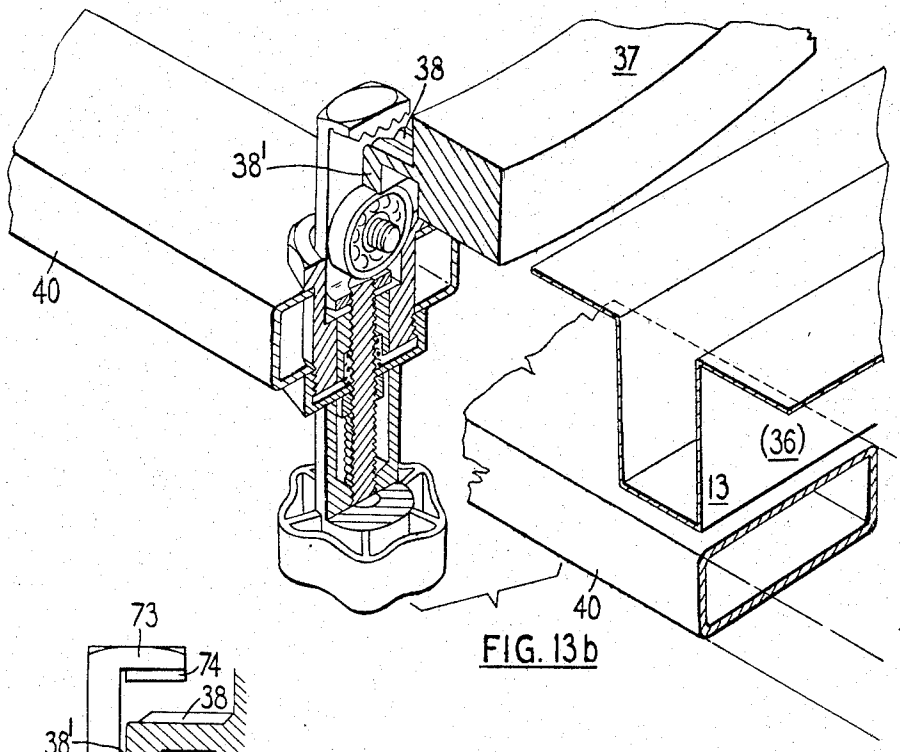


FIG. 13b

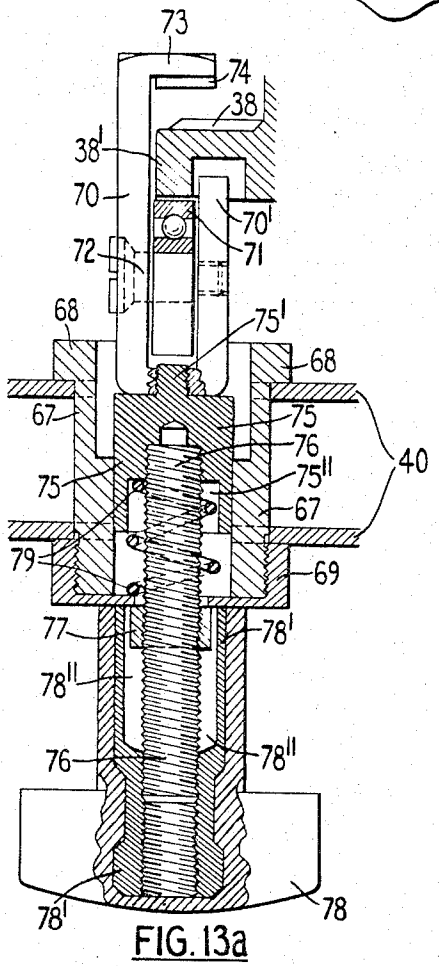


FIG. 13a

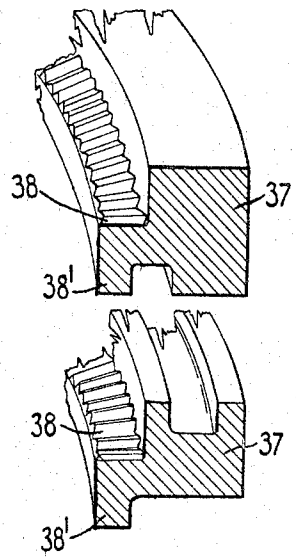


FIG. 13c

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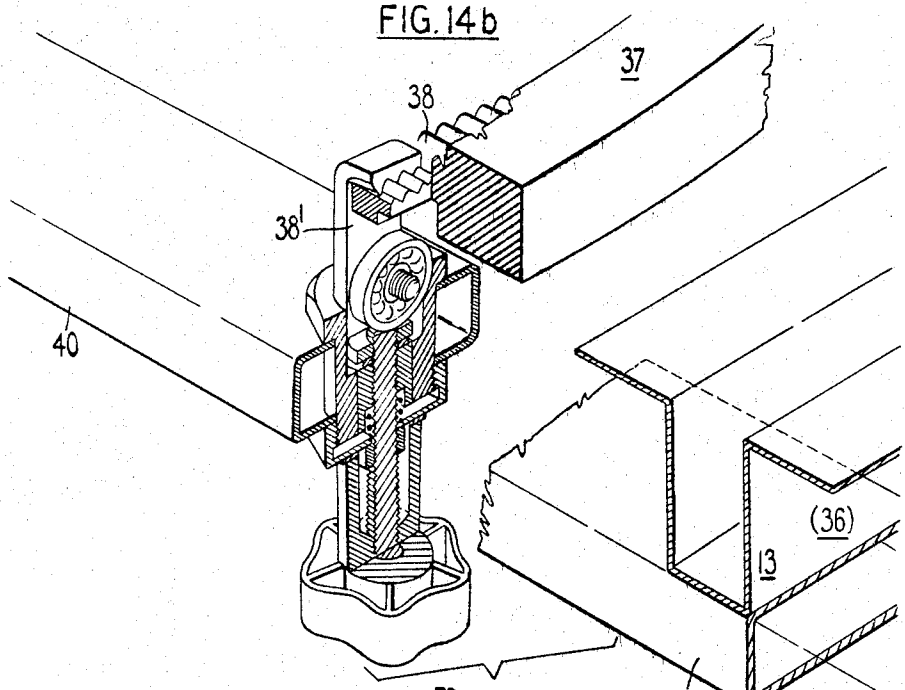
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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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FIG. 14b



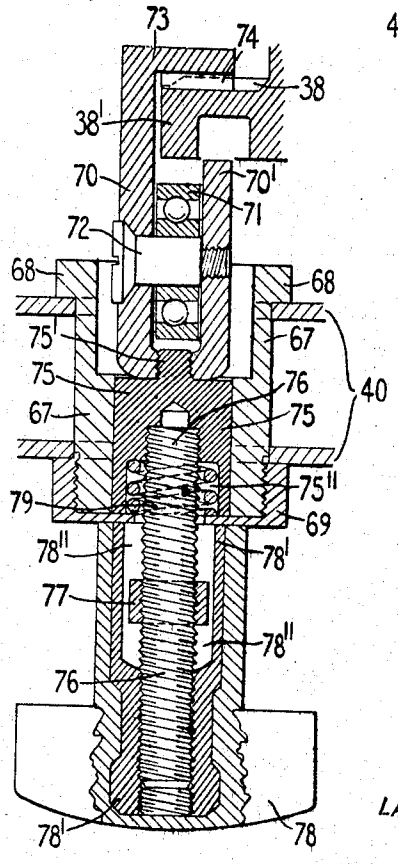


FIG. 14a

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FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

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FIG. 15a

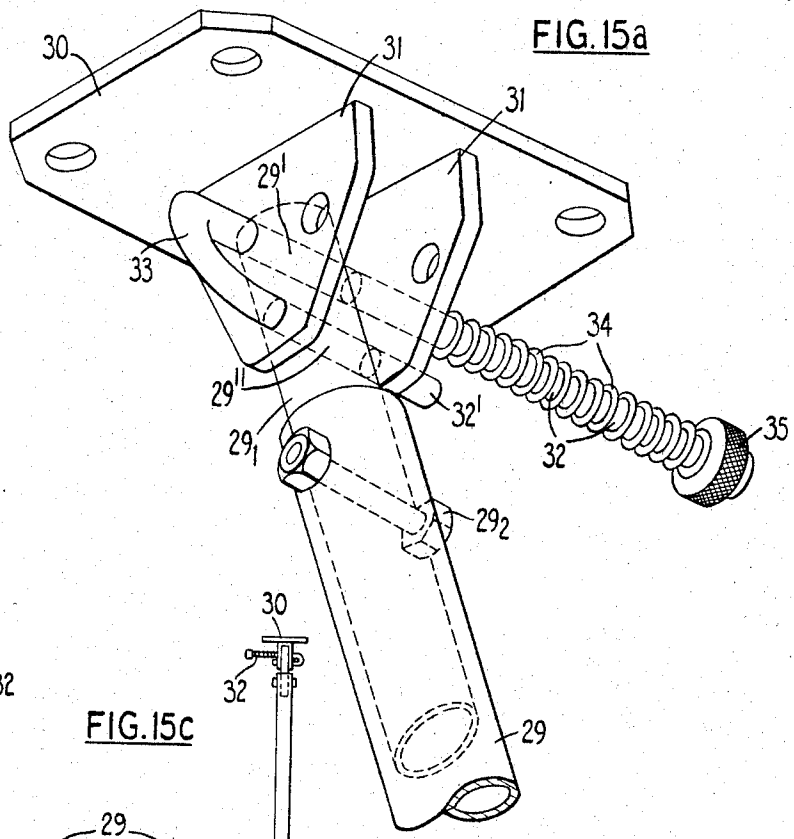


FIG. 15c

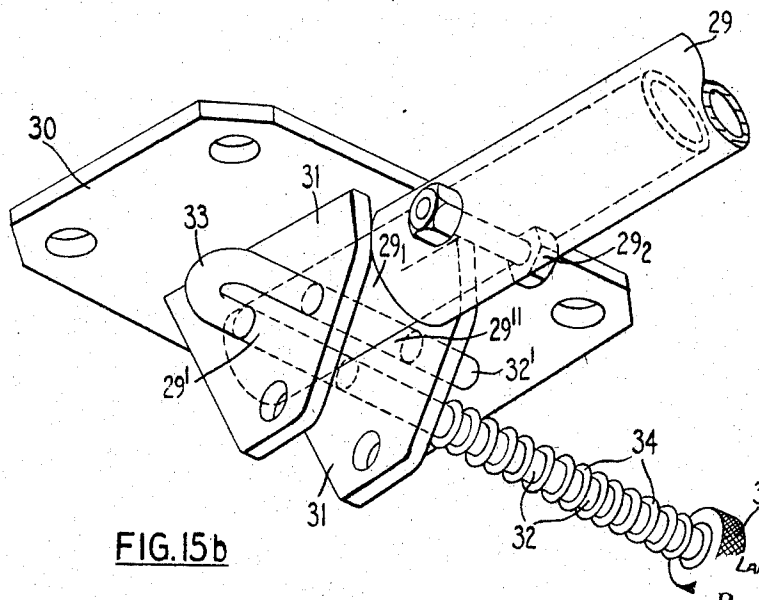


FIG. 15b

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United States Patent Office 3,375,836
Patented Apr. 2, 1968

3,375,836

FOLDING AND AUTOMOBILE-TRANSPORTABLE CAMPING TENT

Lara Domeneghetti, Via Compagnoni 41, Milan, Italy

Filed Oct. 23, 1965, Ser. No. 503,571
Claims priority, application Italy, Mar. 4, 1965, 747,743
2 Claims. (Cl. 135—1)

ABSTRACT OF THE DISCLOSURE

A folding camping tent and support apparatus arranged to be mounted on a motor vehicle. The tent has a rigid floor section secured to its support apparatus which, in turn, is attached, by theft-proof fastening means, to the roof of the motor vehicle. An annular turntable is secured to the rigid floor section and is rotatably mounted on the support apparatus for selectively determining the orientation of the tent with respect to the car roof. Locking means are provided in the support apparatus for securing the turntable against movement.

The present invention relates to a folding and automobile-transportable camping tent having marked improvements over hitherto known tents of this type, being capable of being mounted on the roof of a motor car, and being adapted, by virtue of the aforesaid improvements, to provide a wide range of facilities in order to afford the user with the utmost comfort in use while ensuring a most practical construction to assist the manufacturer in the solution of storage and handling problems of the individual dismantled component members of the tent.

The tent constructed according to the improvements incorporated in the present invention provides, in particular a simplified solution to the problem of rational utilization of parking space and, above all, of adequate floor clearance from the ground.

It is the main object of this invention to provide a folding camping tent, which can be carried on and detachably secured to the roof of a motor car, and is adapted for use both in its anchored position on the roof of the motor car or by removing it therefrom and erecting it on the ground by means of strong folding supports, so as to maintain in both cases a substantial floor clearance from the ground.

It is still another object of this invention to provide a folding camping tent, which can be carried on and detachably secured to the roof of a motor car and which can be oriented in its position of use at will relative to the motor car while it remains anchored on the motor car roof.

It is a further object of this invention to provide a folding camping tent, which can be carried on and detachably secured to the roof of a motor car, and which can be associated with another conventional type of tent to form up a multi-section camping tent assembly.

It is still another object of this invention to provide a folding camping tent, which can be carried on and detachably secured to the roof of a motor car, in which access means to the tent are provided for use when the tent is mounted on the motor car roof, said access means also serving as supporting means for one half of the tent.

The invention further provides means for anchoring the tent to the motor car roof, conveniently provided with an anti-theft device, and also with means enabling the tent, when mounted on the motor car roof, to swivel thereon in order to assure any desired orientation relative to the motor car itself.

Further objects, features and advantages of the tent according to the present invention will become more apparent from the following detailed description which will be easily understood by all skilled in the art of camping

equipment in general and camping tents in particular when read in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of the folded tent in closed condition and mounted for transportation on a motor car roof, a protective waterproof covering being omitted for the sake of clearness.

FIG. 2 is a view similar to FIG. 1, but showing the first stage in the opening out of the tent for use.

FIG. 3 is a view similar to FIGS. 1 and 2, but showing the tent in its fully unfolded and opened out position while still anchored to the roof of the motor car, with a ladder affording access to the tent and serving as supporting means for half of the tent.

FIG. 4 is a perspective view of the tent in its opened out position of use erected upon the ground after being removed from the motor car, the tent being shown associated with a conventional type second tent.

FIGS. 5 and 6 are perspective views illustrating different arrangements of the tent and/or its accessories, while the tent is anchored to the motor car roof.

FIGS. 7*a* and 7*b* are perspective views of details of the tent frame.

FIGS. 8*a*, 8*b* and 8*c* are detail views of a rib for supporting the tent canvas.

FIGS. 9*a* and 9*b* are perspective detail views of an access ladder for the tent and the hinging of ladder to the frame of the tent.

FIG. 10 is an exploded view of means for the anchoring of the frame of the tent to the roof of a motor vehicle.

FIGS. 11*a* and 11*b* are an exploded perspective view and a sectional view respectively of anti-theft means for the anchoring of the tent to the motor vehicle roof.

FIG. 12 is an exploded perspective view of means permitting rotational orientation of the tent while it is anchored to the motor vehicle roof.

FIGS. 13*a*, 13*b*, 13*c*, 14*a* and 14*b*, are detail views of the means illustrated in FIG. 12.

FIGS. 15*a*, 15*b* and 15*c* are detail views of the hinging of folding supports to the frame of the tent for use in erecting the tent upon the ground.

Referring now first of all to FIGS. 1 to 4, the tent according to the present invention essentially comprises:

A base frame divided transversely in two parts **1** and **2**, each constituted of strong wooden boards or similar rigid material, hinged together at their meeting edges so that they can be folded one over the other as will be hereinafter explained, a tent canvas **3** supported by rib members **4**, pivoted on the same axis on which both portions **1** and **2** of the base frame are pivoted, the canvas **3** having two flanks in each of which a window **5** is provided, said window being adapted for opening.

The tent is internally equipped with two small mattresses **7**, stretched out side-by-side over their length, and with other convenient accessories such as a mosquito curtain **8**, supports **9** for the entrance flap **6** of the tent, mosquito curtains **10** for the windows **5** and also window covers **11** therefore operable from the inside by means of a cable**12**.

The parts **1** and **2**, constituting the base frame will now be described in detail.

The pivotal part **2** is reinforced by two stiffening members **14**, which are angularly disposed to each other, the divergent ends of the members **14** being fixed to the hinges for the hinging of the two parts **1** and **2** to each other, and the convergent ends of the members **14** being fixed to a pivotal support for an access ladder to the tent, as will be further explained. The part **1** has secured thereto at its hinged edge a box section profile **15** having an extension as shown more clearly in FIG. 7*a*, acting as a support to the whole length of the hinged edge of part **2**, the extension being downwardly stepped as shown.

The underneath of the part 1 is provided with additional stiffening means. In one embodiment intended for fixed orientation tents two sections 13, illustrated FIG. 4, are disposed parallel to each other at a predetermined distance and transversally to the section 15. In a second embodiment intended for variable orientation tents additional sections (not shown in FIG. 4) are disposed normally to the sections 13. The details of both embodiments are better illustrated in FIGS. 10 and 12 and will be further described hereafter.

FIGS. 7*a* and 7*b* show clearly how the hinging of both the parts 1 and 2 is arranged. Each hinge comprises a pair of upright bracket plates 16 and 17 having at their lower ends inward right angled wings with bolt holes therein for the bolting of the wings to the parts 1 and 2, the upright plates overlapping each other at their adjoining edges to permit the alignment of pivot holes formed in the plates at their upper ends. Through these holes is passed a bolt pin 18 forming the pivoting axis between both the parts 1 and 2. Each of the plates 16 and 17 is provided with a further bolt hole 19 in which are pin-mounted the uprights of the ribs 4 supporting the tent canvas 3.

In addition to these two ribs 4 there is a third rib which is pivoted on the bolt 18, said bolt comprising the hinging axis of the parts 1 and 2. This axis is positioned so as to permit the tipping of the portion 2 onto the portion 1 with interposition therebetween of the flexible and folding tent canvas for passing from the position in FIG. 2 to the closed condition illustrated in FIG. 1 when the tent is to be transported elsewhere. FIGS. 8*a*, 8*b* and 8*c* illustrate the ribs 4 and a few particular embodiment forms thereof.

According to FIG. 8*a* the rib 4 is formed of an upper member 20, consisting of a U-bent-over tube on the arms of which a plug 20′ is secured by riveting. To such plugs 20′ are sleeved, as by simple axial pressure, the tubular uprights 21 of suitable inside diameter, the other ends of which are connected by riveting, as shown in FIG. 7*b*, to bifurcated forks 22, the latter being pivoted on the bolt pins 18 and 19 on the bracket plates 16 and 17. According to the modification illustrated in FIG. 8*b* the rib 4 comprises a horizontal tube 20_1 and two vertical tubes 21_1 connected to each other by two similar bends 20″ made by casting or drop forging with end portions $20_1'$ of reduced diameter to form a plug and socket connection, and with a center eyelet 20‴ for the anchoring of the tent canvas. Coupling between the parts is made by simple pressure. FIG. 8*c* represents the rib of FIG. 8*b* in its entirety, but partially dismantled. An important component of the tent is also a ladder 23, which is illustrated in several of the figures and is illustrated in detail in FIGS. 9*a* and 9*b*. This ladder is pivoted to the base frame part 2 on the tent at the convergent ends of the stiffening members 14 of the part 2. Referring to FIG. 9*a*, the ladder 23 is formed of a first ladder portion 23_1, carrying the steps 25 and terminating at the extreme uppermost part with a round tube 24. Into this first ladder portion 23_1 there can be telescopically inserted a second ladder portion 23_2, having one single fixed step 25′ at the lower end and provided further with a sliding step 26 the position of which can be adjusted—similarly to the position of ladder portion 23_2—in the ladder portion 23_1—by means of four cotter pins 27 connected pairwise by two cables 27′. A round tube 24′ is telescopically inserted in a force fit into the tube 24 of the portion 23_1 of ladder 23. The tube 24′ is longer than tube 24 and projects a little from both ends of the latter. As it may be partially seen from FIG. 9*b*, both extremes of the tube 24 of the portion 23_1 of the ladder 23 are positioned substantially in contact with bracket bearings 28, riveted at the ends of the members 14, whilst the ends of the tube 24′ enter into the bracket bearings 28 so as to act as a pin for hinging the ladder 23 on the base frame part 2 at its outermost end. Owing to the particular structure of the ladder 23 and its

hinge mounting, it can swing relative to the base frame part 2 of the tent of which it also constitutes a support, and is adjustable over its length for adaptation to the height of the motor car on which the tent is anchored and being unaffected by ground unevenness. The ladder 23, therefore, is adaptable under any conditions to form an effective support for the base frame part 2, the tent thus being always disposed horizontally or in one single plane with the base frame part 1, besides also constituting, of course, the means of access to the tent (see FIG. 3). The same ladder assists in the opening and closing operations of the tent (see FIG. 2) inasmuch as it serves as an operating lever. Once the tent has been folded over in the condition as illustrated in FIG. 1, the ladder does not constitute any encumbrance, since the lower portion 23_2 re-enters almost entirely into the portion 23_1 thus shortening the ladder to a length capable of being contained within the width dimension of the base frame part 2 (see FIG. 1).

The herein described tent is anchored to the motor car by securing it to the gutters of the motor car roof by means which will be described hereinafter.

As can be seen from FIGS. 1, 2, 3, 5 and 6 the use of the tent, hereinfore described, in the form as anchored to a motor car roof offers marked advantages for camping with frequent moves, or in places in which available parking space is very limited. Nevertheless, for longer stays in the same place where no space limitation is imposed it is possible to erect the tent on the ground by releasing it from the anchoring means to the motor car roof, while still maintaining for the most part the advantages afforded by the tent when used on the motor car roof, that is to say, the advantages of adequate floor clearance from the ground, and hence to attain immunity from dampness and from disturbance from insects. For this purpose, the underneath of the base frame parts 1 and 2 are provided with folding supports 29 as illustrated in their general outline in FIG. 4, showing their manner of use when the tent is erected on the ground. These support means 29, consisting of U-bent iron tube members, are mounted as depicted in FIGS. 15*a* to 15*c* by means of plates 30, fastened on the underneath of the base frame parts 1 and 2, each plate 30 having a pair of spaced apart cheeks 31 projecting at right angles therefrom, each cheek having three holes therein. Between each pair of cheeks 31 is placed a stud 29_1 consisting of a tube having two through-holes 29′ and 29″ formed in the wall thereof. The stud 29_1 is secured to the cheeks 31 by means of a pin 32 bent at one end 33 to U-shape, the arm 32 of the U being longer than the other arm 32′. The longer arm 32 passes through the holes 29′ in the stud 29_1 which register with the upper innermost holes in the cheeks 31 (viewing FIG. 15*a*). The shorter arm 32′ of the pin can be passed through either of the remaining pairs of aligned holes in the cheeks 31 and also through the second hole 29″ in the stud 29_1. Both arms of each of the supports 29 are adapted to telescope into each other and simultaneously onto the studs 29_1, to which they are locked by the bolt 29_2. By this arrangement, the support 29, can be imparted two different fixed positions as depicted in FIGS. 15*a* and 15*b*, respectively, depending upon the position given to the short arm 32′ of the pin 32 which acts with its long arm as a center pin bridging the aforesaid upper innermost holes in the cheeks 31, as well as the holes 29′ in the stud 29_1. Said both alternative positions of the pin 32 are maintained by means of a coil spring 34 surrounding the long arm of the pin 32 and compressed between an end stop 35 and the side of the most adjacent cheek 31. In the position as depicted in FIGS. 15*a* and 15*c* the support 29 is kept tilted relative to the plane of the base frame of the tent in order to ensure a stable support of the tent upon the ground; whilst, conversely, in FIG. 15*b* the position of the support 29 is substantially parallel to that of the base frame of the tent. It is clear that this second position is required when the tent is mounted on the motor car roof

for housing the supports **29** in folded over positon within the base frame dimensions, whilst the position as depicted in FIG. 15*a* should be chosen when it is desired to erect the tent on the ground in the manner as shown in FIG. 4 after releasing it from the motor car roof. The depth dimension of the supports **29** are such as to ensure in the position depicted in FIGS. 15*a* and 15*c* an adequate clearance of the base frame from the ground for the comfort reasons which have already been mentioned, and to ensure at the same time that the supports in folded over position will be within the dimensions of the base frame part **1** (see FIG. 3) when folded over. If desired the supports **29** may be removed from the assembly by removing the bolts 29_2 and withdrawing the supports **29** from the studs 29_1, when the tent is mounted for transportation (see FIGS. 1, 2, 3) and for use on the motor car roof.

The anchoring means to the motor car roof will now be described in detail. A first embodiment of such means adapted to effect a stationary connection of the tent to the motor car roof is obtained, without possibility of changing its orientation, is depicted in FIG. 10. In this embodiment there is secured to the underneath of the base frame part **1** at least two channel sections **13**, arranged at a predetermined spacing, parallel to each other and perpendicularly to the box section profile **15**, as will be apparent from FIG. 4. The sections **13** have a deep channel shape with right angled flange extensions for their securing by means of bolts to the base frame part **1**. At spaced apart intervals and inside each of the sections **13** there is fixedly inserted at least four short length sections **43** having the same channel shape as the sections **13**, but of less depth so that the deep channel shape of the sections **13** is reduced at intervals to a square section. From the ends of the sections **13** are inserted in the thus obtained free square sections the long sides of the square section telescoping supports **44**, adapted to freely slide in the corresponding seat of the sections **13**, in which through-holes **13'**, bridged by bolts **45**, are further provided. In order to lock the travel of the long side of the square supports **44** sliding inside the corresponding seat of the sections **13** it suffices to tighten the bolts **45**, so that the sections are elastically deformed and tightened onto the square supports **44** which can thus be positionally adjusted; depending upon the width of the roof of the motor car.

The long sides of the supports **44** have right angled branches at their ends to which upright pillars **46** are adjustably telescoped by means of a bolt **47** passed through a pair of aligned bolt holes in the branches of the supports **44** and through any selected pair of a plurality of pairs of bolt holes formed in the pillars **46**. Each pillar is provided at its lowermost end with a support bracket comprising a support plate **48** having a turned over right angled projection **49** at its upper ends. The support plate may be provided with a covering case **48'** of plastic material. The plate **48** is connected to the lower end of the pillar **46** by means of a rivet **46'** permitting a tilting adjustment of the plate **48** to allow it to accommodate itself to a different tilting of the gutters on the several motor car models in circulation. The support plate projection **49** is provided with a square hole **50**, in which fits the square portion **51** of the shank of a pin, the outer portion **52** of the shank being threaded. A clamping bracket **53** is pivotally suspended from the square shank **51** by means of a plug pin **51'** passing through the shank and through a turned over bearing portion of the clamping bracket **53**, the latter being drawn into mating relationship with the support plate **48** by means of a bolt **54** passing through a threaded hole **48''** in the plate **48**, the end of the bolt being slightly riveted at **54'** on the rear of the plate **48** in order to prevent pulling through. The clamping bracket **53** can, owing to the key hole slot **55** therein, move vertically in relation to the bolt **54** by operation of the locking handwheel **57**, whilst the portion **55'** of the slot **55** serves to receive the part **54''** of the bolt **54**. An outwardly turned lip **56** formed on the lowermost end of the clamping bracket **53** is adapted to engage underneath the gutter or drip of the motor car in the limited clearance space for the door, whilst the support plate **48** engages directly on the drip. In order to fasten the tent body assembly to the motor car, it will suffice to tighten the lip **56** of the clamping bracket **53** underneath the gutter of the motor car and simultaneously the plate **48** above this. This is done in one single operation by tightening the handwheel **57** on the threaded portion **52** of the pin **51** after prior interposition of a spring washer **58** between the hand-wheel base and the projection **49** of the plate **48**. The adjustment provision for the upright **46** telescoping inside the support **44** permits vertical variations of the position of the base frame of the tent relative to the motor car roof, so as to be adapted to the different swells of the roofs of the several motor car models.

FIGS. 11*a* and 11*b* illustrate in perspective view with parts dismantled and in section, respectively, a particular form of tightening handwheel **59**, to be used as an alternative to the preceding one, adapted to prevent malicious people from easily robbing the owner of the entire tent by releasing it from the motor car when left unattended when the tent is in the folded position or arranged for transportation on the motor car roof. To this end, the handwheel **59** is provided with an inner bushing **60**, which is internally threaded to receive the screwed portions **52** of the pin **51**, said bushing being mounted loose inside the handwheel **59**, but restrained against axial displacement therein by means of a plug **61**, circumferentially inserted in a hole **62** of the handwheel and cooperating with a circumferential groove **63** of the bushing **60**. The operation of the handwheel will consequently result in the tightening and releasing of the tent connections only when the handwheel **59** and the bushing **60** are fast with each other; otherwise the handwheel **59** will rotate around the bushing **60**. In order to make the handwheel **59** fast with the bushing **60** provision is made for the axial insertion inside the handwheel **59** via the hole **59'**, positioned in the middle of the upper portion thereof, of a tool plug **64**, terminating with a triangular key portion **64'** having rounded corners, adapted to penetrate a hole provided with a corresponding shape, formed axially in the center of the upper part of the bushing **60**. Like a key, the plug **64** will be removed by the user when he leaves his motor car in order to avoid the possibility of theft. Nor will it be possible for thieves to make the handwheel **59** fast with the bushing **60** owing to the unusual shape of the section of both receiving holes of the triangular portion **64'** of the plug **64**. Said shape of the hole section has been adapted to eliminate the possibility that by introducing in the hole **59'** an easily available tool, such as a common screwdriver, the thief would be enabled to make the handwheel **59** fast with the bushing **60**, because the blade of the screwdriver, having unrounded corners, ends up by rotating loose both inside the triangular hole **59'** and the similar and corresponding hole in the bushing **60**. In order to better conceal the particular structure of this anti-theft device, that is to say, to hide the hole **62** and also the triangular hole **59'** in the handwheel **59**, a sleeve **65** consisting of plastic material coats the handwheel **59** at its shank portion, whilst its operating portion is covered with a cap **66**, also consisting of plastic material.

Further embodiments according to the present invention differentiate the anchoring means described above in detail from the anchoring means illustrated in FIG. 12, and adapted to provide a tent connection with the roof of a motor car permitting orientation of the tent in situ.

According to this invention, the base frame part **1** is in the present instance strengthened by a pair of outwardly flanged channel sections **13** and by another pair of similar sections **36**, assembled in such a way as to form a substantially square space, inside which a rigid circular rim **37**, preferably consisting of metal (see FIG. 12) is fastened by direct-bolting it onto the base frame part **1**, or in any

other suitable manner. The rim 37 is formed with an inwardly stepped toothed rack 38 at its lower peripheral edge and is mounted so as to be capable of sliding and being locked inside four devices 39 (only one of which is shown in FIG. 12) which will be described hereinafter, carried by two tubes 40, mounted in turn onto the anchoring means 41 of the base frame of the tent to the motor car. More accurately, the mounting of the tubes 40 on the anchoring means 41 can be arranged so as to have different adjustable distances between the members 41 by providing more pairs of holes 42, 42', and 42'' in the tubes 40 for use in the locking arrangements provided in order to firmly connect the tubes 40 to the members 41. Such locking arrangement is carried out by means of four staples 40', one for each crossing point between the tubes 40 and the members 41. In consideration of the requirement to adapt one single dimension of the tent to different motor car models, at least two different distances can be obtained between the members 41 by aligning the staple 40', which as depicted in FIG. 12, with the pair of holes 42 and 42' or alternatively with the other pairs of holes 42' and 42'', keeping in mind that the distances between the pairs of holes 42, 42' and 42'' are identical to the distances of the pairs of holes 40'' of the staple 40'.

The anchoring means 41 are formed of a member having a square section, built preferably by the association of two channel shaped sections mounted one into the other and two square section supports 44' similar to those 44 in FIG. 10, which serve for supporting the tent upon the motor car, and are telescopically received within the ends of the members 41. The members 44' can be first adjusted and then locked in a plurality of contiguous positions on the members 41 by tightening via the hole 41' a bolt 41'' which passes through a hole 44'' in the member 44', so as to adapt the connection to the width of the motor car. The anchoring means 41 are mounted on the motor car roof in the same manner and function as do the sections 13 in FIG. 10, the outer branch of each member 44' receiving uprights 46, identical to those previously described and similarly equipped. Also the anti-theft device illustrated in FIGS. 11*a* and 11*b* can be used in this embodiment of the anchoring means. It will be noted that, whilst according to the embodiment of the anchoring means depicted in FIG. 10 the tent is rigidly connected with its base frame to the sections 13 and thence to the motor car and can consequently take only one single position relative to the motor car itself, with the anchoring assembly as depicted in FIG. 12, which is described hereunder with some of its details referring to FIGS. 13 and 14, it is possible to effect orientation of the tent relative to the motor car. Of both arrangements the former is obviously simpler and less expensive, the latter being more complete and versatile.

With reference to FIGS. 13*a*, 13*b*, 13*c*, 14*a* and 14*b* a detailed description of the operation of the devices 39 for sliding support and locking of the circular rim 37 is provided hereunder, which devices enable the rim 37 to rotate together with the base frame of the tent on which it is fastened and thereby to permit variation of the orientation of the entire tent above the motor car. The devices 39 in FIG. 12, wherein only one of the four devices is shown, are illustrated in detail in section in the FIGS. 13*a*, and 14*a* at both the different limit positions that they can take. In FIGS. 13*b* and 14*b* the same supports are shown in perspective together with other parts, already described. Each device 39 comprises a metal bushing 67, preferably of brass, mounted inside the tube 40 with its upper head 68 supported on the outside of the upper surface of said tube, the bush being locked in position by a threaded ring 69, screwed on the other end of the bush which is threaded. Inside the bushing 67 is mounted one end of a fork 70, carrying a ball bearing 71, encircling a screw 72, the fork 70 terminating with a right angled lip 73, which is internally toothed at 74. Inside the bushing 67 is mounted loose and with very limited play another metal bushing 75, consisting preferably of steel, an upwardly extending threaded projection 75' of which is adapted to firmly screw on to the base of the fork 70, whilst at its opposite end the bush 75 is adapted for screw threaded engagement with a tie rod 76, so that the three distinct members, i.e. the fork 70, the bushing 75 and the threaded tie rod 76 are assembled as one single unit. The fork 70 is disposed in such a way as to project from the bushing 67 through the head 68, whilst the threaded tie rod 76 projects through the end opposite to the fork, passing through a hole in the threaded ring 69 in order to receive a handwheel 78 having the same construction and uses as those of the handwheel 57 depicted in FIG. 10. A safety ring 77 is screwed from the outside on the tie rod 76 until it abuts against the threaded ring 69. It is to be noted that the outside diameter of said ring 77 is larger than the diameter of the hole in the threaded ring 69 through which the tie rod 76 passes and smaller than the diameter of the bell-shaped part 78'' of a metal bushing 78', adapted for drop forging into the handwheel 78. It follows, therefore, that said safety ring 77 does not allow, when it is screwed on the tie rod 76, the movement of the tie rod itself out through the head 68 of the bushing 67, whilst on the other hand it can be contained in and freely slide inside the bell-shaped part 78'' of the bushing 78' of the handwheel 78 when said handwheel is tightened (see FIG. 14*a*). The safety ring 77 has been provided to prevent the possibility that during propulsion of the motor car with the tent in transportation position, due to the possible loss of the handwheel 78 of the four devices 39, the bushing 75 may become released from the bushing 67 and with them the threaded tie rods 76 and the fork bodies 70, and finally the rim 37 fastened on the bottom with the entire tent and with the serious consequences which would ensue from such an occurence.

Inside the bushing 67, that is inside the cavity 75'' delimited by the bushing 75 and the bottom of the threaded ring 69, is disposed a strong spring 79, which constitutes a device member of essential importance. It tends to push upwardly the entire moving equipment, namely the bushing 75 and the fork assembly 70, which is firmly connected thereto by the threaded portion 75' and to raise said fork 70 outwardly of the bushing 67, through its head 68.

As can be seen from FIGS. 13*b*, 13*c*, and 14*b*, the rim 37 is mounted on the upper part of the fork 70 with its toothing 38 facing the teeth 74 of the fork lip 73 and with its extension or projection 38' resting on the ball bearing 71. Now, in the condition as depicted in FIG. 13*a* in which the handwheel 78 is not tightened, the teeth 74, under the action of the spring 79 are not engaged by the toothing 38 provided on the stepped down inner periphery of the circular rim 37. The disengagement of these two different toothed parts is caused by the fact that due to the force exerted by the strong spring 79 the ball bearing 71 strikes and pushes upwardly the projection 38' which is shaped and functions as a rail for the rim 37, with the consequence that raising upwardly of the rim 37 also raises the base frame of the tent fastened thereto and simultaneously also the pair of the sections 13 and 36, fastened to the same base frame part 1. As a result, said sections raise from the tubes 40 which, instead, being connected to the anchoring means 41 by means of the staples 40', remain fast with the motor car at their pre-existing height from the ground (see FIG. 13*b*, where the detachment of the tube 40 from one of the sections 13 can be clearly seen). In this case it can be said that the whole assembly constituting the tent anchoring is basically divided relative to the ground floor into distinct parts i.e., one lower and one upper part. The lower part is constituted by the motor cars, the square section supports 41', the anchoring means 41 and

finally the tubes **40**, connected to the means **41** by the staples **40'**. On the other hand, the upper part comprises the base frame part **1** of the tent with the pairs of sections **13** and **36** and the rim **37** on said base frame part firmly fastened together to the whole tent assembly. The meeting point between the lower part and the upper part is represented by the ball bearings **71** which can roll over the rail **38'** of the rim **37**, whilst the toothed portion **74** of the lip **73** of the fork **70** is raised slightly from the toothed part **38** of the rim **37** whereby the base frame part **1** of the tent can rotate by moving the rail **38'** of the rim **37** to slip over the ball bearings **71**, which rotate loose on their axes constituted by the screws **72**. By tightening the handwheel **78**, it is possible to overcome the strength of the spring **79** and to cause the fork **70** to partially re-enter into the bushing **67**. In practice, this fork **70** can position itself either in the position of maximum extension with free spring, as represented in FIGS. 13*a* and 13*b*, or in the position of minimum extension with compressed spring, like that represented in FIGS. 14*a* and 14*b*, and naturally also through unlimited intermediate positions obtained by progressively tightening the handwheel **78**. This operation causes the forks **70**, to gradually lower into the bushings **67**, and with them the rim **37**, resting with its rail **38'** upon the bearings **Y1** and the entire tent fast with the rim **37** secured to the base frame part **1**, to gradually lower also. The lowering of the rim **37**, however, accompanies that of the forks **70** only for a portion of their travel. At a particular point during lowering, in fact, the sections **13** or **36**, fastened to the base frame part **1**, the height of which is greater than that of the rim **37**, contact against the tubes **40** resting thereupon and unloading onto the tubes **40** themselves and from there directly onto the anchoring means **41** the entire weight of the tent that was supported on the bearings **71**. The bearings **71** become detached from the rail **38'** as the lowering of the forks **70** proceed under the tightening of the handwheels **78** and remain spaced away from the rail **38'** without taking any load whatsoever. By fully tightening the handwheels **78**, the teeth **74** of the forks **70** engage the toothing **38** of the rim **37** and securely lock it against rotation. It is clear that the position depicted with reference to FIGS. 13*a* and 13*b* of the assembly corresponds to the condition in which it is possible to orient the tent—unloaded of persons or objects—by causing it to rotate with little effort due to the sliding engagement between the bearings **71** and the rail **38'** of the rim **37**. On the contrary, the position of the assembly in FIGS. 14*a* and 14*b* corresponds to the use and transportation condition of the tent at the end of the orientation operation; in this condition it is possible to load the tent with persons and objects without injurious consequences, the load weighing directly upon the supports of the motor car.

Some further remarks will be helpful to specify the characteristics of the mounting described with reference to FIGS. 13*a* to 13*b*: It should be noted, for example, that the rail **38'** of the rim **37** also serves for the mounting of the rim **37** itself inasmuch as it straddles the forks **70**, being guided on its outer part by the smaller inner ends **70'** of the forks **70**, and its inner limit part by the corresponding inner sections of the same forks, whilst the ball bearings **71** are support means for said rail **38'**, during rotation of the rim when, with free spring, it is not locked by engagement with the toothed portion **74** of the fork lip **73**.

It is also to be noted that the force of the spring **79** is predetermined so as to even slightly exceed the weight of the entire tent with its stiffening sections and the rim **37**, as well as the ladder **23** and the interior equipment and the like, but without, of course, the weight load of any persons therein. It is for this reason why the circle **37**, together with the base frame part **1** and the sections fastened thereto, can be kept spaced from the tubes **40**, constituting an integral part of the anchoring means of the tent to the motor car, so as to be free to rotate over the ball bearings **71** under the control of the user.

In order to bring the tent from its transportation position, as depicted in FIG. 1, to the use position, as depicted in FIG. 3, a few simple operations suffice to ensure an immediate result. One begins to extend the ladder **23** withdrawing the telescopic extension-piece 23_2 to be used as a lever member, adapted for tipping of the base frame part **2**. By slightly forcing upwardly the pivoted end of the ladder **23** and then by drawing downwardly towards one's self the end of the ladder **23**, the base frame part **2** is caused to rotate (FIG. 2) on the pivoting axis of both the base frame parts **1** and **2** of the tent and as it tips over it simultaneously folds out the canvas **3**, supported by the ribs **4**. The next step in the erection of the tent is to adjust the ladder in the manner previously described with reference to FIG. 9*a* for supporting said base frame part **2** in such manner that it is disposed into planar relationship with the base frame part **1**.

FIGS. 5 and 6 illustrate modifications of the arrangement of the tent shown in FIG. 3. FIG. 5 illustrates the same tent rotated 90° relative to its orientation in FIG. 3, and the association with it of an auxiliary tent T erected upon the ground and protected by another outer canvas, indicated at T_1 the use of which is to provide accommodation for additional campers or to provide space for utility or the like services as may be desired from time to time. FIG. 6 represents the tent in the same position as depicted in FIG. 5, but with the addition thereto of some separate curtain members for creating a shaded area. The same members, if connected to each other by disposing them vertically underneath the base frame part **2**, would form another enclosure for auxiliary use, such as, for example, a dressing room.

On the other hand FIG. 4 represents a tent arrangement for use when one stops to camp in a particular place for some days, and it is desired to enjoy enhanced comfort, especially when it is desired to avail of the motor car for making short journeys while the tent remains erected at a fixed location. To this end, the tent is fully released from the motor car by unscrewing the handwheels **57** thus releasing the entire assembly of the connecting members of the tent to the motor car roof. The tent thus released is then erected on the ground so as to rest upon the folding supports **29** fitted and adjusted as described with reference to FIG. 15*a*. In this position the tent is considerably spaced upwardly away from the ground with all the attendant advantages of this arrangement. FIG. 4 shows the tent associated with another tent P of conventional type having at least two entrances so as to form one combined unit consisting of two compartments, the former being used for sleeping only, whilst the latter serves as living room, dressing room or for the like purposes. From FIG. 4 it will be seen that the auto-transportable tent is fed forward, even if by very little, into a door of the conventional tent, whilst the canvas member P_1 which normally forms a closure for said door, is left lying upon the roof of the auto-transportable tent with marked advantages to the user. The other entry of the tent P has its closure canvas member P_2 supported in raised position to constitute a covered veranda.

The outstanding advantages afforded by the tent according to the present invention will be apparent. It permits of automobile transportation by immediate and expeditious utilization of the motor car roof, thereby eliminating any personal fatigue and all the other well known inconveniences incidental to the conventional type tents, thus constituting a tent which is particularly adapted for quick camping while touring by motor car. This does not exclude, however, the alternative of using the tent for an extended camping in one location by releasing it from the motor car to be then installed on the ground by means of the folding supports **29** in order to freely utilize the car for any other desired use.

A particular advantage is provided by the facility for rotating the tent relative to the motor car carrying it. This facility permits, in fact, orientation of the tent opening in the preferred direction to enjoy sunshine or to get a protection from sun rays, to look at a landscape, or not to be disturbed by neighbours and so on. Moreover, it also permits adjustment of the tent position in accordance with the contour of the ground on which the motor car has been parked. The parking ground may not always be even and level over its area, and at times a slight rotation of the tent would make its support through the ladder **23** safer. The same advantage is afforded if the space for parking and erecting the tent is limited.

The means used for the erection and utilization of the tent according to the present invention ensure the maximum anchoring safety to the motor car roof and the tent durability. Further, the anti-theft device also provides the user with a perfect safety against possible theft of the tent during short periods of time in which the motor car with the tent mounted thereon is left unattended. The tent according to the present invention is adapted for mounting on any motor car whatsoever, it being capable of being carried by small-sized cars, transference from which to cars having larger dimensions being effected by simple adjustments permitting application of the tent to the different motor car models by adjusting the position of the supports **44** and **44'** and uprights **46**, as well as by the tilting of the support plates **48** in order to adapt the tent to the different widths, swells and tiltings of the gutters of the different makes of cars. It will be understood that other practical embodiments of the tent according to the present invention could be devised which come within the scope of the present invention. It will in fact, be evident that several changes and modifications could be introduced in the construction and mounting arrangements of the above-described tent with reference to the figures shown in the accompanying drawings and as defined in the appended claims, without departing from the scope of the inventive concept.

I claim:

1. A folding tent constructed and arranged for removable mounting on the roof of a motor vehicle, said folding tent comprising, in combination, a pair of substantially rectangular rigid floor sections; carrier means, including releasable anchoring means, adapted to removably secure one said floor section to the roof of a motor vehicle; an annular turntable attached to the underside of said floor section arranged to be secured to the roof of a motor vehicle; said carrier means including support elements engaging said turntable and providing for relative rotation thereof; said turntable formed with a ring gear; said support elements engaging said turntable comprising bushings fixed to said anchoring means, fork members slidably mounted in the respective bushings and extending upwardly therefrom, and roller bearing means mounted in said fork members and engageable with said turntable; one arm of each fork member having a portion overlying the turntable and formed with teeth engageable with said teeth of said ring gear; spring means biasing said fork members upwardly to support said turntable on said roller bearing means; said carrier means limiting downward movement of said turntable; said locking devices including means operable to retract said fork members downwardly against the bias of said spring means to engage said teeth of said fork members with said teeth of said ring gear; the downward movement of said turntable being limited by said carrier means, whereby said roller bearing means are retracted from said turntable and the teeth on said fork members are engaged with the upwardly facing teeth of said ring gear.

2. A folding tent, as set forth in claim **1**, wherein at least two demountable members are arranged to be secured to the side gutters of a motor vehicle roof; substantially theft-proof fastening means for securing said demountable members to the gutters; and a pair of second members extending transversely to said demountable members and adjustably attachable thereto; said support elements and locking devices for said turntable being carried by said second members.

References Cited

UNITED STATES PATENTS

522,334	7/1894	Lurgard et al.	85—32
791,548	6/1905	Fisher	339—272
1,033,685	7/1912	Eskew	182—205
2,179,045	11/1939	Lewis	85—45
3,202,159	8/1965	Reed	135—1

FOREIGN PATENTS

376,008	4/1964	Switzerland.
989,081	4/1965	Great Britain.

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