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2,683,265

AUTO TOP SLEEPER AND COMPARTMENT

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3 Sheets-Sheet 1

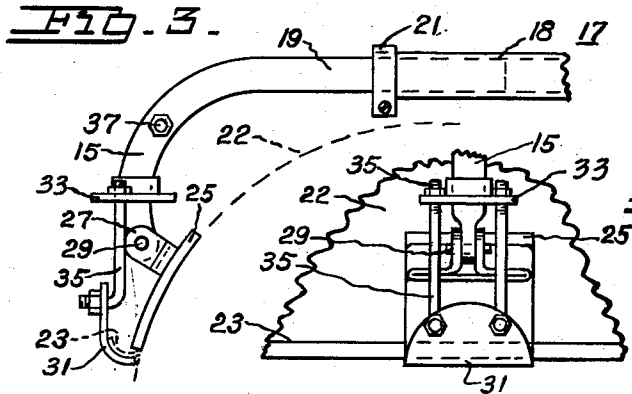
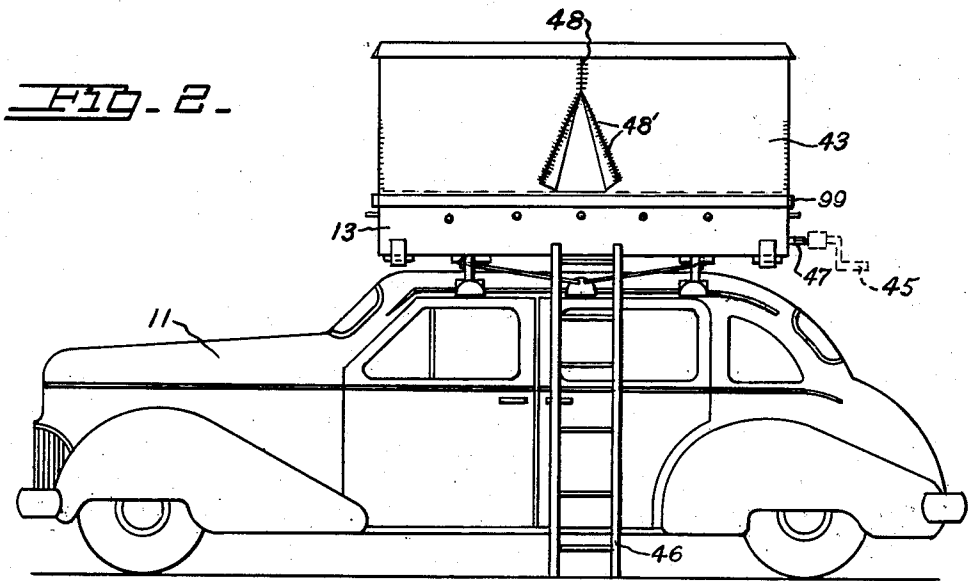
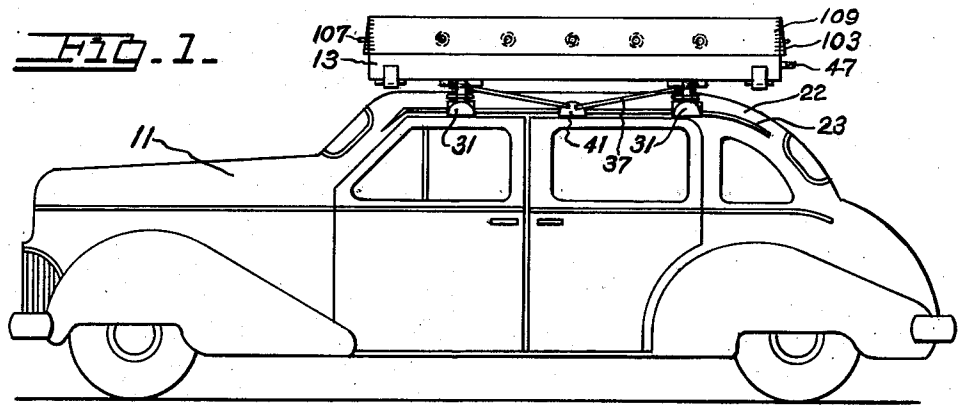


FIG. 4.

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Fig-6.

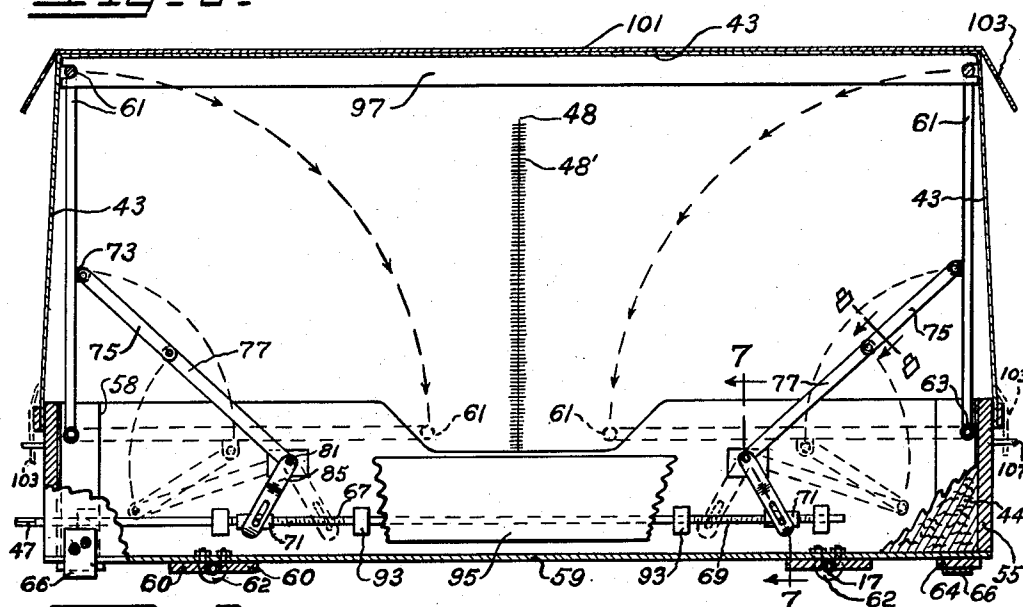
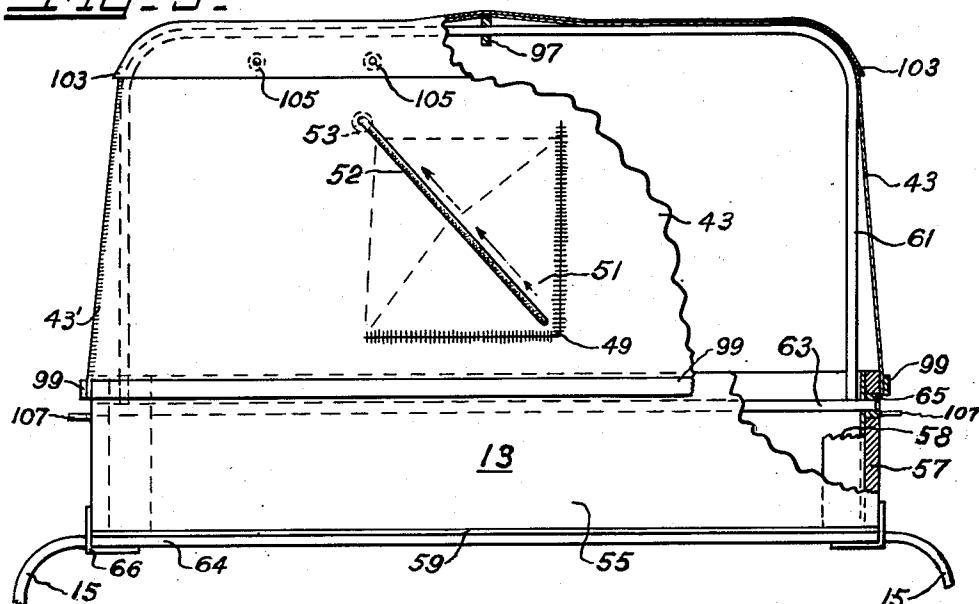


Fig. 5.



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FIG. 7.

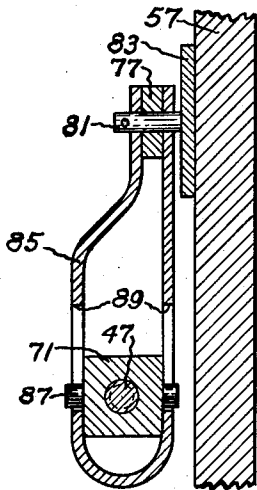


FIG. 8.

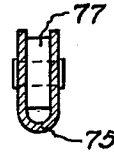
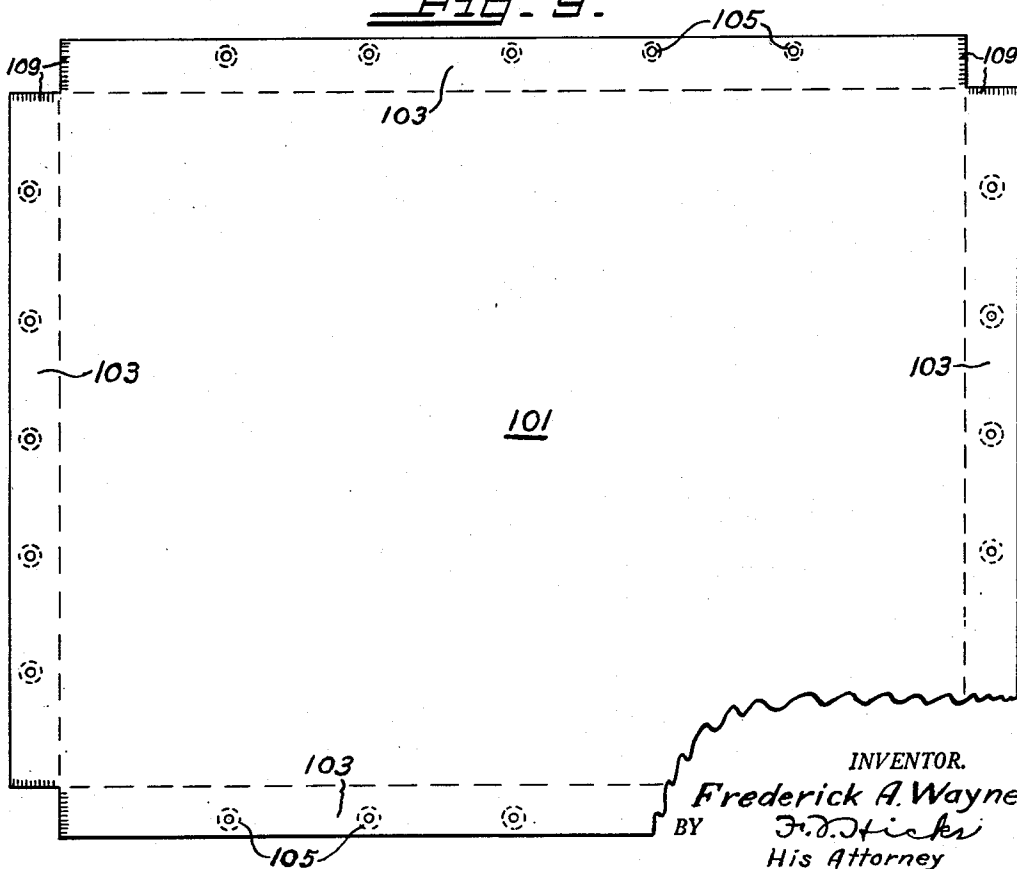


FIG. 9.



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AUTO TOP SLEEPER AND COMPARTMENT

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Application May 21, 1953, Serial No. 356,449

3 Claims. (Cl. 5—119)

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The invention pertains to compact folding portable beds and sleeping compartments and more particularly to portable folding beds and sleeping compartments suitable for mounting for transportation and use upon the tops of closed body automobiles.

It is an object of the invention to provide portable outdoor sleeping beds and compartments which may be mounted and secured upon the tops of closed body automobiles, or upon other vehicles, and which may be conveniently opened up for use on top of the vehicles or which may be conveniently collapsed and folded down into a small weatherproof pack offering but slight air resistance while the vehicle is in motion.

It is also an object of the invention to provide such a foldable auto top sleeper which is of a simple sturdy construction embodying control mechanism whereby a single manual operation rapidly opens it for use or folds it for travelling.

It is a further object of the invention to provide such an auto top sleeper with improved cover means for the greater comfort of the occupants when sleeping therein.

Another object of the invention is to provide such an auto top sleeper with a cover having an extra top cover to facilitate folding it down into a compact pack which is weatherproof without the necessity of carrying an extra tarpaulin to be applied as the sleeper is closed for travelling or to be removed and stored away as the sleeper is opened for use and which also serves as an extra waterproof top cover when the device is opened in normal use on top of the automobile.

Further objects and advantages are within the scope of the invention, such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features, as will be apparent from a consideration of the specification in conjunction with the drawings disclosing specific embodiments of the invention, wherein similar reference characters are applied to corresponding parts throughout, and in which:

Fig. 1 is a side elevational view showing my auto top sleeper and compartment installed upon an automobile and folded into a small pack ready to travel;

Fig. 2 is a similar view but showing the sleeper compartment erected and ready to be entered by way of the ladder at one side;

Fig. 3 is an enlarged fragmentary rear or front view of one foot of the auto top carrier resting

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and clamped snugly on top of the automobile top, the latter being shown by dotted lines;

Fig. 4 is a side view of the carrier foot shown in Fig. 3;

Fig. 5 is an enlarged end view showing the auto top sleeper compartment opened, with the flexible cover being partially removed and one end corner broken away and sectioned to show the interior;

Fig. 6 is a side elevational view broken away and sectioned to show internal elements, the opened position being shown in full lines and the closed position being shown in dotted lines;

Fig. 7 is an enlarged sectional view through one arm of one of the bell-cranks, on line 7—7 in Fig. 6;

Fig. 8 is a cross-sectional view through one of the bow operating links, as shown by line 8—8 on Fig. 6; and

Fig. 9 is a plan view showing the extra top cover; which is secured on top of the other flexible cover.

Referring more specifically to Fig. 1 of the drawings, I have illustratively disclosed an embodiment of my auto top sleeper and compartment as it appears when installed upon the top of a closed body automobile sedan 11 with the sleeping compartment folded down as it is when the automobile is travelling. The sleeper comprises a mattress box 13 which is made of a length and width ample to receive a suitable mattress therein to provide substantially for the comfort of the passengers who sleep thereupon. This mattress box 13 is made of a rugged construction, as will be seen when it is subsequently examined in greater detail, and it is carried upon a strong auto top carrier having feet 15 which rest upon the top of the automobile. For this purpose the carrier may be any of the great many strong auto top carriers commonly available for carrying boats, hunters' camping equipment, workers' tools and accessories. But I have found it advantageous to provide a strong rigid auto top carrier, as shown in Fig. 1 and in greater detail in Figs. 3 and 4. This auto top carrier has two tubular cross-supports 17 extending cross-wise over the top of the car at spaced positions, one being toward the front and the other toward the rear of the automobile, as shown. Each such cross-support is made of two pieces of pipe one 19 of which is just enough larger in diameter to slide in telescoping relation over the other one 19 so that the total length can be adjusted to suit the width of the auto top whereupon it is to be installed, as may be seen in Fig. 3. A clamp ring 21 is provided attached to the end of the larger

pipe 13 whereby it may be clamped snugly to the smaller pipe, after proper adjustment has been made.

The outer ends of these tubular cross-supports are bent down to provide four downturned feet 15 to rest upon the curved side surfaces of the car top 22 just above the rain gutters 23. A curved pedestal plate 25 is provided on the lower end of each of these tubular feet to fit upon such curved surfaces and to uniformly distribute the load thereon. However, it is to be noted that the weight of the passengers will be on the top of the car only when it is standing still and not when it is in motion. Each curved pedestal plate 25 is connected pivotally to the lower end of one of the tubular feet by a pair of spaced lugs 27 rising from the pedestal plate to receive a bolt 29 passed therethrough and through the lower end of the tubular foot, the latter being flattened and suitably apertured to receive the bolt. These upstanding lugs 27 may be formed by taking a heavy metal bar, bending the end portions back to form two U-shaped parts opening together with two legs joined or continuous. The two ends are bent outwardly to form two lugs 27 in a suitably spaced relation as shown. This lug bracket may then be welded to the pedestal plate. The lower edge of each pedestal plate 25 may rest in the rain gutter 23 on the adjacent side of the auto.

To clamp each carrier foot firmly down and to hold it in place while the automobile is travelling on the road, I provide each foot with a clamp plate 31 the lower edge of which is bent to hook up under the rain gutter 23. A clamp ring 33 is installed at a suitable position up on each tubular foot, where it is firmly secured, as by welding or brazing. A pair of clamping bolts 35 draw the clamp ring 33 down to the clamp plate 31, the ring and the plate being suitably apertured to receive these clamping bolts. In this manner each tubular foot is accurately fitted down upon the curved side surfaces of the top of the automobile where it is firmly and snugly secured and held in position. To provide for additional rigidity of the entire installation, I provide brace rods 37 each secured at one end into a suitable aperture thru the tubular foot, and the other end of each brace rod being anchored in an anchor plate 41 which has its lower edge bent to hook up under the rain gutter at a position midway between the two feet of the carrier. By drawing up the ends of these brace rods 37, as by the nuts provided threadably on the ends thereof, great strength and rigidity can be imparted to the entire top carrier installation to endure the many miles of rough travel encountered on a long trip.

Fig. 2 shows the sleeping compartment erected and opened up from the mattress box 13 to hold a flexible waterproof cover 43 up in a protective enclosure over mattress 44 and around the sleeper. The mattress 44 rests down in the mattress box 13, a portion thereof being shown in Fig. 6. This is readily accomplished by the single manual operation of applying a small crank 45, shown dotted, to the exposed end of a shaft 47 and turning it in a proper direction, which operation will be later described in greater detail.

As Fig. 2 shows, access is conveniently available to the persons about to sleep in the auto top compartment by means of a short lightweight ladder 46 such as commonly utilized on railway sleeping cars. The side of the flexible cover 43 is provided with a slit 48 which may be easily opened by the entering passengers. The edges of this

slit are provided with conventional slide operated edge fasteners 48' which are readily operated to join the edges in a well known manner. A similar entrance slit may also be provided on the opposite side of the compartment.

As Fig. 5 shows, a window opening 49 is conveniently provided by cutting an angular flap 51 in the flexible cover. This window is opened by lifting and curling this flap 51 away from the opening and this is easily accomplished by the occupant pulling the inner end of a rope 52 which passes freely through a grommet ring 53. The outer end of this rope is secured to the apex or corner of this angular flap 51 and pulling up the rope 52 causes the window flap 51 to be pulled back, as represented by dotted lines in Fig. 2. All of the sidewalls and endwalls of the sleeper compartment may be provided with such easily operated window flaps. Insect excluding plastic screening is preferably secured on the inside of the flexible cover over all of these openings, the edges being provided with convenient slide type edge fasteners so that these nettings can be secured over or removed from these openings to suit the convenience of the occupants.

As Figs. 5 and 6 show, the mattress box 13 is a sturdy structure comprising two end walls 55 and two sidewalls 57, the ends of which are joined and reinforced by corner or metal angles 58 secured vertically inside of these corners. A strong floor or platform 59 is provided under the bottom of this box for supporting the mattress 44, seen in Fig. 6, and the mattress box upon the carrier. This platform has two pairs of cross-pieces 60 extending thereunder, each pair being spaced suitably to serve as a saddle resting upon one of the tubular cross-pieces 17 of the carrier to which this platform is secured by U-bolts 62. Under each end of the platform is a cross-piece 64 attached to the box by angles 66. At each end of the box a cover supporting bow 61 is provided secured at its ends, as by welding, to a bow shaft 63. The ends of these bow shafts 63 are pivotally supported in suitable bearing apertures provided in the corner angles 58 and these also have tubular bearing bushings 65 welded thereto and extending out into the sidewalls of the box to provide ample bearing surfaces for the ends of the bow shafts.

For quickly and conveniently controlling the opening up or the folding down of the sleeping compartment, I provide the single manually operative member or bow control shaft 47 with suitable power transmission means so that turning the shaft in one direction raises the two cover supporting bows, and turning the shaft in the opposite direction causes the two bows to be simultaneously lower and folded down on the mattress box. This may be readily accomplished by a right-hand thread 67 and a left-hand thread 69 upon spaced apart portions of the bow control shaft, and also providing a pair of correspondingly threaded actuator nuts 71 on these respectively different threads on the control shaft. Each bow is provided with a lug 73 secured to the bow 61, as by welding, at a suitable intermediate position for pivotal connection to one end of an actuating link 75 as by a bolt passed therethrough. The other end of each actuator link 75 extends suitably for pivotal connection to the swinging end of one arm 77 of a corresponding bell-crank which is pivotally mounted on a pivot pin 81 projecting from a base-plate 83 secured to the sidewall of the mattress box. The

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two bell-cranks are pivotally mounted at suitable positions so that the driven arms 85 thereof are suitably extended for operative connection with the respective actuator nuts 71 on the bow control shaft 47. The swinging arms 77 of the bell-cranks are made substantially longer than the driven arms 85 to multiply the movement.

As may be seen from Fig. 7 taken with Fig. 6, the driven arm 85 of each bell-crank is made double to pass on opposite sides of each actuator nut 71, the latter having oppositely extended pins 87 projecting slidably into slots 89 for positive driving connection with the driven arm of each bell-crank. As may be seen in Fig. 7, the driven arm 85 of the bell-crank is fabricated by cutting suitably located slots 89 into a heavy metal bar which is then bent double suitably to dispose the two slotted portions in a side-by-side relation spaced apart suitably to receive an actuator nut 71 slidably therebetween with the pins 87 therefrom slidable in the slots. The ends of this metal bar are then deformed so as to come closely together and to snugly engage on opposite sides of one end or the other of swinging arm 77 of the bell-crank and these parts are rigidly joined by welding to form a strong rigid bell-crank. This welded joint is suitably apertured for pivotal mounting upon the pivot pin 81 projecting from the base plate 83.

The bow control shaft 47 is rotatively supported along one sidewall of the mattress box by a plurality of spaced bearings 93 thereon, and one end of this shaft is exposed and squared for convenient manual turning as by slipping a suitably socketed crank 45 thereon. This shaft is preferably mounted on the inside of the mattress box, as shown, for protection from adverse weather and dust conditions. A shield 95 of sheet metal, or other sheet material, is provided over this shaft and its operating mechanism to shield it from direct engagement with the mattress and bed clothing.

In addition to selecting the relative lengths of the arms of the bell-cranks and the angular positions thereof to provide for multiplied movement as the bows are lifted or lowered, it will also be seen that these parts are so related to the actuator links 75 as to provide a straight aligned, or toggle, arrangement when the bows attain the elevated or upstanding positions. This provides ample force to draw the flexible cover taut and to hold the erected compartment rigidly against the forces of wind and adverse weather.

When the bows have been erected, a ridge pole 97, which may be a one by two inch wooden strip of suitable length and slotted at the ends, is inserted between the centers of the upper portions of the two bows to eliminate sagging and hold the flexible cover 43 up rigidly and straight, as may be seen in Figs. 5 and 6.

The flexible waterproof cover 43 may be made of tent canvas, or of any other suitable textile or plastic sheet material. The ends of this sheet material are secured down to the ends of the mattress box while passing freely over the bows in an unattached relation. Attachment to the ends of the box is simply made by narrow strips 99 disposed over the ends of this cover material, and secured to the box by screws or nails. This arrangement, which may be seen in cross-section in Fig. 6, permits the bows to move freely under the cover while being elevated or lowered.

The sidewalls of the cover, in which the door slits are formed, are also a part of this cover. The lower edges of these sidewalls of the cover are

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also clamped on the outside of the mattress box by strips 99 secured thereto.

As further protection over the top I also provide an extra top cover 101 which is shown in plan view in Fig. 9. This extra top cover is made slightly larger in length and width than the mattress box to provide marginal securing flaps 103. This extra top cover is secured, as by sewing or cementing, to the top intermediate portion of the first mentioned cover, depending upon the material. When the sleeping compartment is erect, marginal flaps 103 of this extra cover stand out or incline outwardly due to the bulk of the material and provide additional protection, as shown in Figs. 2, 5 and 6, said marginal securing flaps 103 serving a purpose resembling that of the conventional eaves on a house. Also this arrangement provides a replaceable top for renewing the cover after considerable use.

When the bows are lowered and folded together, as represented by dotted lines in Fig. 6, the marginal flaps 103 of the extra top cover fall down around the sides of the mattress box, as represented in dotted lines in Fig. 6. These marginal flaps are provided with fastener rings 105 to fasten snugly upon complementary pins 107 projecting outwardly from the sides of the mattress box. The corner edges of the marginal securing flaps 103 of the extra top, as shown in the plan view Fig. 9, are provided with edge fastening means 109 of the slide operated type so that these corners may be snugly zipped together when the sleeper compartment has been folded. The zipping together of these corners and the fastening down of these marginal flaps 103 is such a quick operation that it requires only a few extra seconds to assure that a snug weather-proof closure is provided over the box and a compact pack is provided on top of the automobile so that even a full day's drive in adverse weather or rain will not cause the mattress or the bed clothing to become damp.

The corners of the main cover 43 are preferably secured together, at least half way up, by means of conventional slide actuated edge fasteners 43' so that the cover can be conveniently opened for removing or inserting the mattress 44. In preparing to travel, the ladder 46 and the ridge pole 97 are placed in the sleeping compartment upon the bed before folding the compartment down, and these parts are carried in this position during movement of the automobile.

It is apparent that within the scope of the invention modifications and different arrangements may be made other than herein disclosed, and the present disclosure is illustrative merely, the invention comprehending variations thereof.

What I claim as new and wish to secure by Letters Patent of the United States is:

1. In an automobile top sleeper and compartment adapted for convenient detachable mounting for use and transportation upon the top of an automobile and arranged to be quickly opened for use or folded for transportation while installed upon the automobile top the combination of, a mattress box, a pair of cover supporting bows, means mounting said bows pivotally upon said box to be turned to an elevated upstanding spaced relation from opposite ends of said box for enclosing a sleeping compartment or to be collapsed down upon said box in a folded compact relation for transportation, a flexible waterproof cover disposed over said bows to be stretched in a compartment enclosing relation when the bows are

elevated to upstanding positions, a bow control shaft having a right hand thread and a left hand thread on different portions thereof, a pair of correspondingly threaded actuator nuts disposed respectively on the two threaded portions of the bow control shaft, bearing means rotatively supporting said shaft along one sidewall of the mattress box with one end of the shaft arranged for convenient manual turning in either direction, power transmission means operatively connecting each one of said bows with a respective one of said actuator nuts so that rotation of the shaft in one direction causes the two bows to be simultaneously elevated in spaced relation at opposite ends of the mattress box and so that rotation of the shaft in the opposite direction causes the two bows to be simultaneously lowered and folded down together into said mattress box, said power transmission means comprising a pair of bell-cranks, means pivotally mounting said bell-cranks on said sidewall of the mattress box adjacent the threaded portions of the shaft to dispose a first arm of each bell-crank in cooperative connection with a corresponding actuator nut, a pair of links each pivotally connecting between the swinging end of a second arm of each one of the bell-cranks and an adjacent bow for moving the bows simultaneously to elevated or lowered positions, the lengths of said second arms of said bell-cranks being substantially longer than the lengths of the first mentioned arms of the bell-cranks which connect with said actuator nuts to provide magnified movements of the bows as the shaft is turned, and the lengths and positions of the second arms of the bell-cranks being arranged and connected to the bows so as to provide for straight aligned toggle relations of the second arms and the links as the bows are elevated to their upstanding positions.

2. In a convenient folding auto top sleeper and compartment for use and transportation upon the top of an automobile the combination of, a mattress box, a pair of cover supporting bows, means mounting said bows pivotally upon said box to be turned to an elevated upstanding spaced relation from opposite ends of said box for enclosing a sleeping compartment or to be collapsed down upon said box in a compact folded pack for transportation, a flexible waterproof cover disposed over said bows to be stretched in a compartment enclosing relation when the bows are elevated to upstanding positions, said flexible cover being disposed freely over said bows with the ends of the cover secured down to the ends of the mattress box and having suitable slack to permit the bows to move freely thereunder and to stretch the cover to a snug compartment enclosing position as the bows move to upstanding positions, an extra top cover secured on top of said flexible cover of dimensions slightly larger than the plan of the mattress box to provide

marginal securing flaps extending laterally to be secured down over the outside of the mattress box when the cover and the bows are folded down in a collapsed position, attachment means on said marginal flaps, attachment projections provided on the outer upper edge of the mattress box in suitable spaced positions to cooperate with the attachment means on said marginal flaps, and edge fastening means for joining the edges of the marginal flaps at the corners of the mattress box to provide a snug weatherproof cover for transportation on top of an automobile during inclement weather conditions.

3. In a convenient folding auto top sleeper and compartment for use and transportation upon the top of an automobile the combination of, a mattress box, a pair of cover supporting bows, means mounting said bows pivotally upon said box to be turned to an elevated upstanding spaced relation from opposite ends of said box for enclosing a sleeping compartment or to be collapsed down upon said box in a compact folded pack for transportation, a flexible waterproof cover disposed over said bows to be stretched in a compartment enclosing relation when the bows are elevated to upstanding positions, said flexible cover being disposed freely over said bows with the ends of the cover secured down to the ends of the mattress box and having suitable slack to permit the bows to move freely thereunder and to stretch the cover to a snug compartment enclosing position as the bows move to upstanding positions, angular flaps cooperative with corresponding angular apertures in the sidewalls of the flexible cover providing a corner or apex whereby the flap may be conveniently pulled up to form a window opening, a flexible cord-like member attached to the apex of each angular flap and passing along the outside of the sidewall to move freely through a grommet ring in the sidewall into the enclosed compartment for convenient operation by an occupant to turn the flap outwardly for opening the window, and edge securing means whereby the edges of the flap may be secured to the edges of the opening when it is desired to snugly close the opening.

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