United States Patent [19]

Couix

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[45] **Aug. 21, 1973**

[54] **FOLDING CARAVAN**

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July 31, 1970 France 7029126

[52] **U.S. Cl.** ..... **296/23 R,** 135/4 A
[51] **Int. Cl.** **B60p 3/34**
[58] **Field of Search** ..... 296/23 R, 23 A, 23 E, 296/23 F; 135/1 A, 4 A

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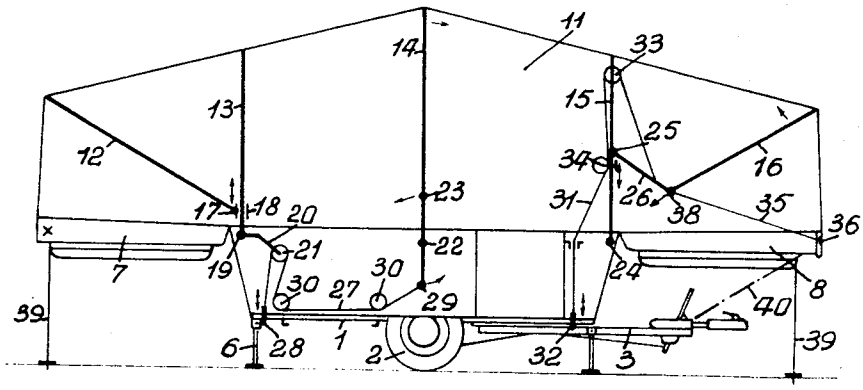
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[57] **ABSTRACT**

Folding caravan comprising a frame equipped with wheels and a harness, a body closed by two lids and containing the canvas for a tent which may be stretched over the said body when the two lids are opened, characterized in that the frame comprises five ribs of which three are articulated on the body whilst the other two are each articulated on one of the previously mentioned ribs in such a way as to obtain a middle rib articulated on the body, and on each side two ribs, one articulated on the body the other articulated or hinged on the preceeding rib, in such a way that the opening or closing of the lid automatically and instantaneously cause the folding or unfolding of the tent which is supported by the frame.

16 Claims, 10 Drawing Figures



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Fig. 1

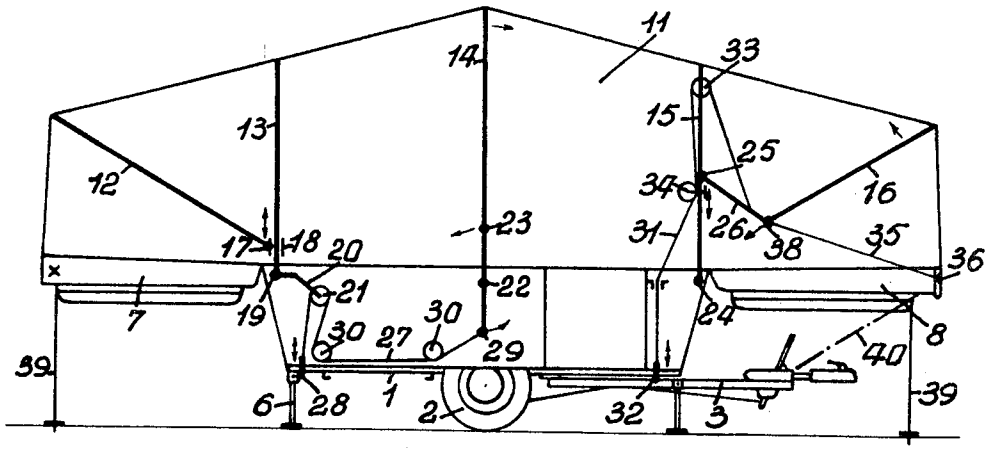


Fig. 2

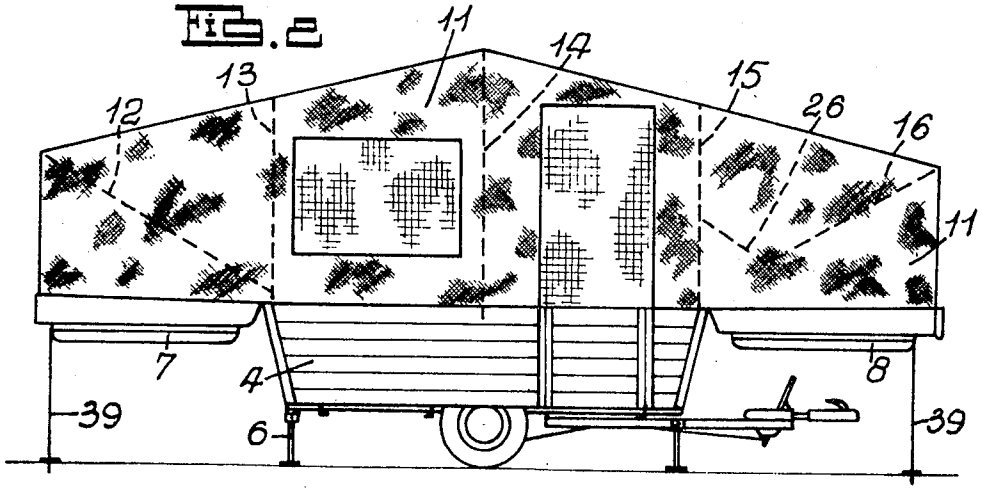
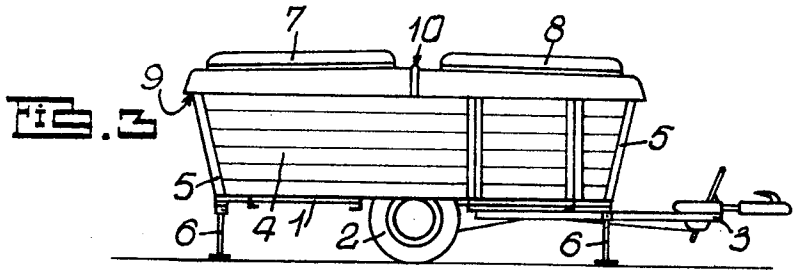


Fig. 3



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Fig. 4

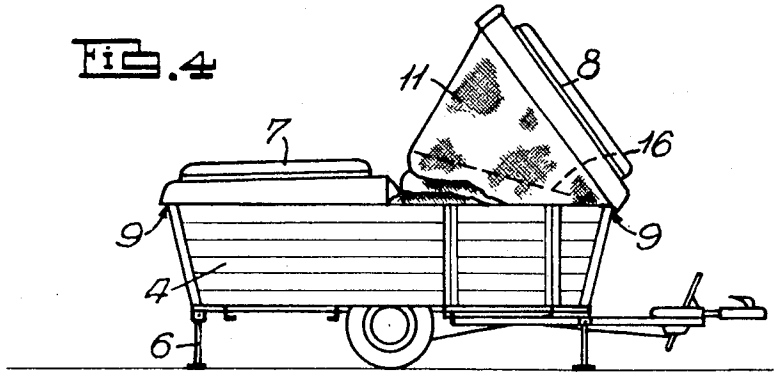


Fig. 5

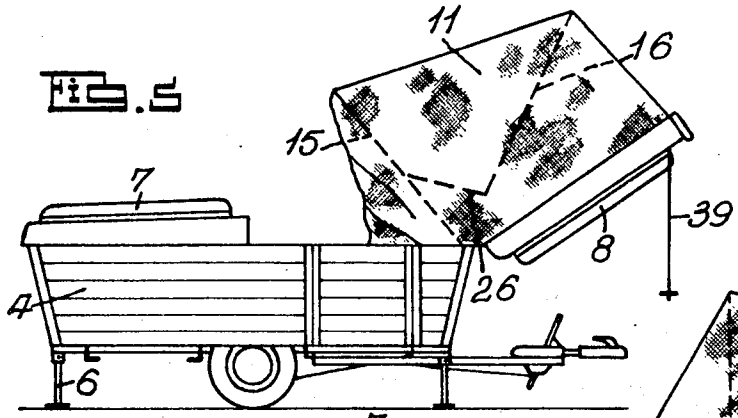


Fig. 6

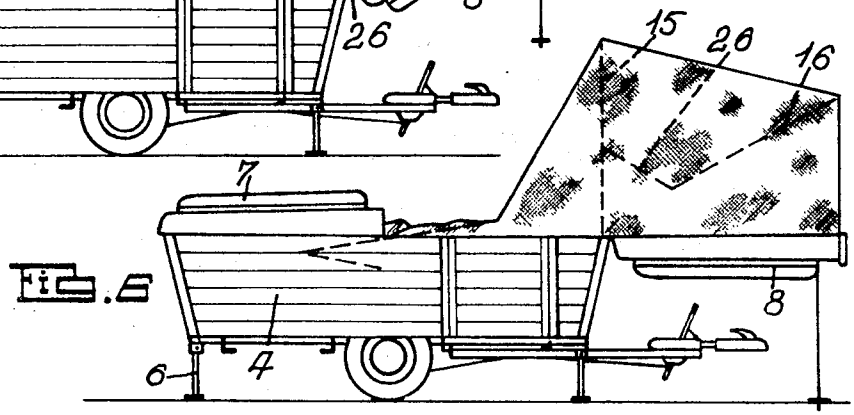
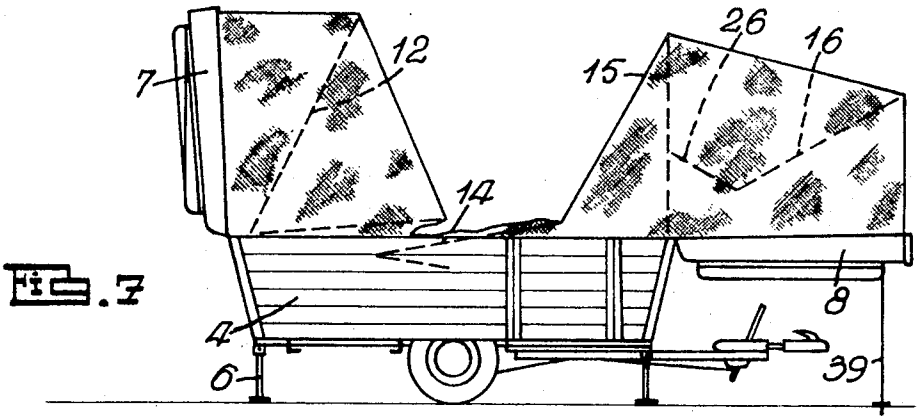


Fig. 7



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Fig. 8

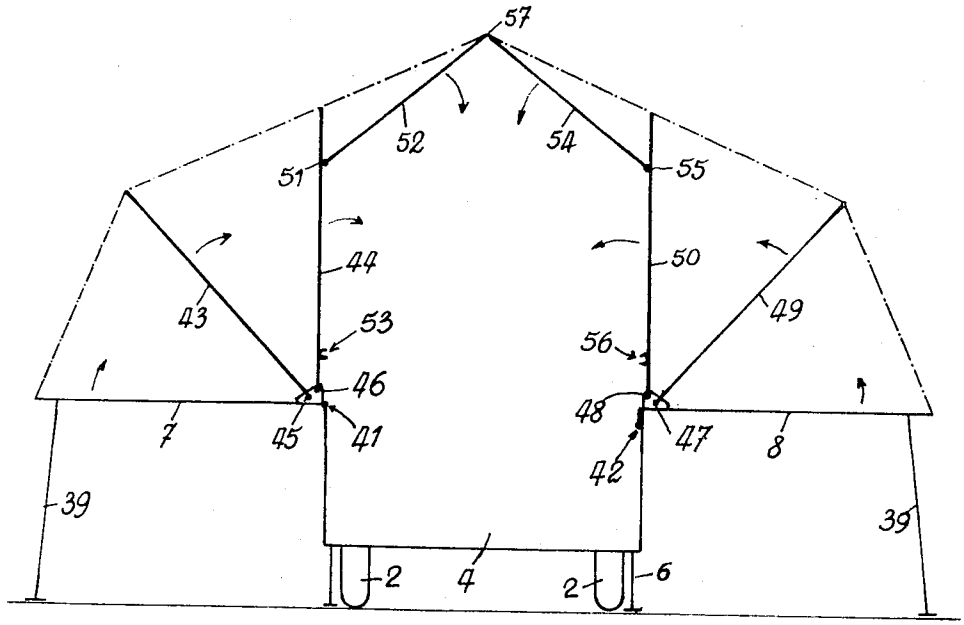


Fig. 9

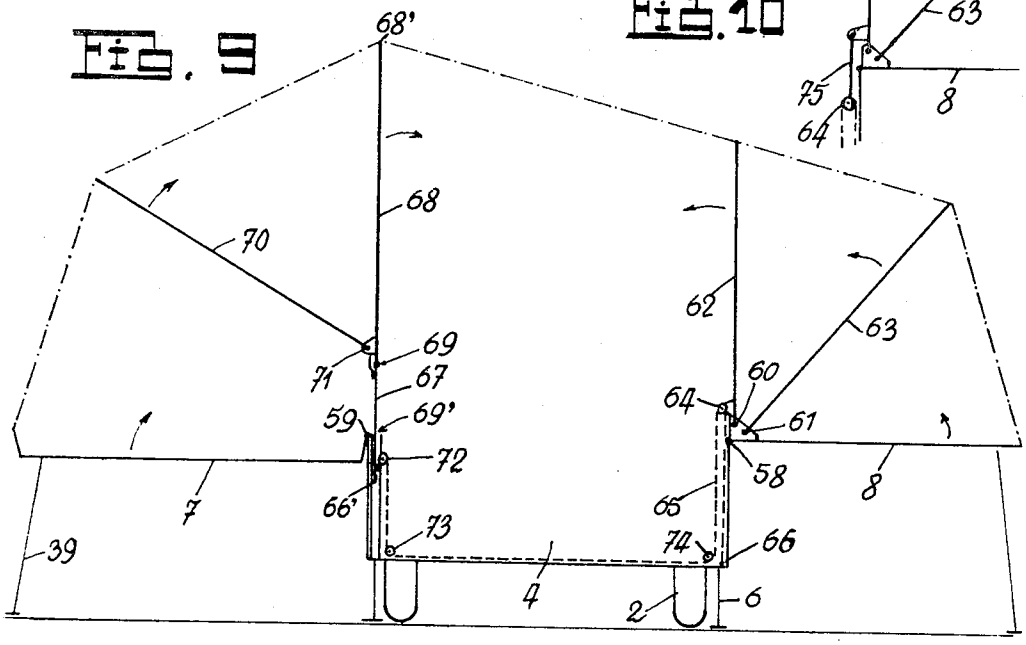


Fig. 10

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FOLDING CARAVAN

The present invention concerns folding caravans of the "semi-rigid" type consisting of a frame equipped with wheels, a body closed by one or two lids and containing a folding canvas tent which can be stretched over the above mentioned body in its open position.

In the known caravans of this type the inconvenience resides in the way of setting up and dismantling of the tent canvas which is long and tedious. Certain caravans exist with self erecting canvas but the principle is quite different and is only valid for small tents of restricted sheltered surface and living space.

The caravan according to the present invention avoids these inconveniences. In this case the setting up and the folding of the tent are simple and quick operations owing to the system of an articulated framework both practical and rational which ensures an automatic and instantaneous unfolding of the canvas as well as its folding. The folding caravan in question offers an important sheltered surface and a convenient living space for a large number of persons as well as room for all the luggage and chattels usually carried. It comprises two independent compartments for four adults and a possibility to accomodate in the body two children or two adults.

A first characteristic of the invention resides in the fact that the ribs to which the canvas is fixed are articulated on the body and are controlled by the opening or closing of the two lids by means of a transmission by cable.

Another characteristic of the caravan resides in the shape of the walls of the body which are made up of plastic hollow laths assembled between the U shaped (channels) guides of the frame.

The opening and closing of the lids of the body which effect the folding and unfolding of the tent takes place in a determined order. When folding a system locking one of the lids in the open position prevents any faulty handling. When opening it is the overlapping of the lids which shows the opening sequence.

The harness, brakes and suspension of this caravan are of a known pattern. In the usual way the lids are equipped with luggage shelves on which are articulated and locked the struts meant to keep the lids in their open position and which receive the mattresses. In alternative embodiments is foreseen a caravan which instead of opening in the longitudinal sense of the body opens and closes in the transversal sense, that is on the longer lateral sides of the body.

The following sketches are given as an example :

FIG. 1 shows diagrammatically the articulated frame of the tent.

FIG. 2 represents the caravan with tent in its open position.

FIG. 3 same with the tent folded.

FIGS. 4, 5, 6 and 7 show the different phases of the unfolding of the tent.

FIG. 8 is a diagrammatic view of a small folding caravan with transversal opening.

FIG. 9 shows a folding caravan opened transversally but of a larger size.

FIG. 10 gives a detail of another possible alternative articulation system of FIG. 1.

On FIGS. 1 to 7, 1 is the frame of the caravan with two wheels 2 and a harness 3.

The body is composed of hollow laths 4 made of plastic material held together by their edge and piled between the U-shaped (channel) guides 5 into which fit their extremities. This system allows a quick replacement in case all or part of the panel should be damaged. Eventually by an appropriate filling of the laths 4 a thermal insulation may be realized.

The frame is equipped with four folding jacks 6 intended to keep the caravan steady and horizontal.

The rigid body 4 has on its top the two lids 7 and 8 each hinged at point 9 on the smaller sides of the caravan. When in the folded position FIG. 3 the lids touch each other with a small overlap as shown by 10.

The folding framework of the tent 11 is composed of 5 tubular ribs 12, 13, 14, 15 and 16. The inclined rib 12 is hinged on an adjustable socket 18 which can slide on rib 13. This latter is hinged on the body 4 at point 19. It is prolonged on each side by an arm 20 at the end of which is fixed a pulley 21. The middle rib 14 oscillates around the articulation point 22 of body 4. This rib is made of two parts hinged together at point 23. Rib 15 is hinged on the body at point 24. In approximately the middle of this rib 15 is hinged at point 25, an arm 26 of the inclined rib 16 is articulated at 38. The coupling together of the two ribs 13 and 14 is done by means of a cable 27.

One of the ends of cable 27 is fixed to the frame 1 by a draw-bolt 28 adjustable for tension. The other end is fixed to the free extremity 29 of the central rib 14. Between these two fixing points 28 and 29 the cable passes on pulleys 21 of rib 13 and on two other small pulleys 30 articulated on the frame 1.

The coupling between ribs 15 and 16 is obtained by another cable 31. One of the extremities of this cable is fixed to the frame 1 by a draw-bolt 32 intended to adjust tension. The other end of this cable is fixed to the arm 26 of rib 16. Between these two fixing points the cable is guided by two pulleys; a first one 33 articulated on rib 15 and the second one 34 is mounted slidingly on rib 15 under the point of articulation 25. This adjustment allows the tightening of cable 31.

Lastly rib 16 and lid 8 are coupled together by means of cable 35. One of the ends of this cable 35 is fixed to the lid at point 36. The other end rests on articulation 38 formed by the rib 16 and the arm 26.

The unfolding of the caravan takes place after the body 4 has been placed horizontal by means of the four jacks 6.

The sequence of opening the lids 7 and 8 is compulsorily given by the overlap 10 of lid 8 on lid 7 FIG. 3.

On opening lid 8, as shown in FIG. 4, rib 16 pivots around 38. Then, FIG. 5, rib 15 pivots around articulation 24. During its rotation this rib allows arm 26 to pivot around articulation 25 by the intermediary of cable 31. The result is that the two cables 31 and 35 are simultaneously tightened and thus cause the stabilisation of the resting point 38.

On opening the second lid 7 rib 12 pivots around point 17 and afterwards rib 13 pivots around the articulation of the fixed point 19. This rotation moves pulley 21 which acts on cable 27. Rib 14 then pivots around articulation 23 and at the same time pulls cable 27 which causes the rotation of the hinged part of rib 14 around the articulation of the fixed point 22 until this rib 14 places itself in the position shown in FIG. 1. When open the lids rest on struts or supports 39.

The locking system 40 fitted between the lid 8 and the harness 3 prevents any faulty handling during the folding operation during which the same operations are repeated in inverse order by beginning with the closing of lid 7.

In the alternative form of the caravan shown in FIG. 8 the lids 7 and 8 are hinged on the larger sides of the body at 41 and 42. Owing to the fact that the hinges 42 of lid 8 are staggered the closing of lids 7 and 8 on the body 4 can be accomplished by an overlap.

The lid 7 holds by means of gussets near the hinges 41 two ribs 43 and 44 articulated at 45 and 46. Lid 8 has also two ribs 49 and 50 hinged on gussets at 47 and 48.

Rib 44 supports two locking arms 52 hinged on each post 51 which in the folded position can be clipped to 53.

On rib 50 another rib 54 is mounted articulated at 55 and which can be clipped to 56 when folded.

The handling of this caravan is as follows:

In order to fold the two arms 52 or rib 54 they are unclipped at 57. The said arms are then clipped on rib 44 at point 53, and 54 clips on rib 50 at point 56 in order to permit the rotation of lid 8 around articulation 42. During its rotation this lid 8 forces ribs 49 around 47, and 50 around 48. The lid 7 closes through a rotation around hinge 41 pulling rib 43 around 45, and rib 44 around 46.

In order to unfold, when lid 7 pivots around 41, ribs 43 and 44 are pulled. Lid 8 also pivots around 42 and draws ribs 49 and 50. By unclipping point 56 of the rib 54 on rib 50 its rotation around 55 is made possible. The keeping in position of rib 54 is obtained after unclipping from point 53 the two arms 52 and by clipping together at point 57 the said two arms on rib 54. The tension of the canvas is obtained by this operation.

The alternative caravan shown in FIG. 9 is also opened and closed transversally relatively to the body 4. It consists of a lid 8 hinged at 58 on the body 4, and opposite is lid 7 hinged at 59. The closing is operated by lid 7 overlapping over lid 8.

Lid 8 has two ribs 62 and 63 hinged respectively at points 60 and 61 on gussets. On rib 62 is fitted on each side a pulley 64 on which passes a cable 65 anchored to the body 4 at point 66.

On one side of the body 4 are mounted two sliding parts 67 at the extremities of which are hinged at 69 the uprights of rib 68. On gussets of this rib 68 and hinged at the point 71 is hinged another rib 70.

At the free extremity of each slide 67 is fixed the other end of cables 66', but previously the cable 65 passes over pulleys 72, 73 and 74.

The anchoring of cable 65 at point 66 at the bottom of the body 4 allows an adjustment of the tension of the above mentioned cable.

The working of this caravan is as follows:

To fold: — the lid 8 is closed by rotation around 58. The rib 63 pivots around 61 whilst rib 62 pivots around 60 drawing in its rotaton pulley 64 fixed to rib 62. This pulley 64 in nearing pulley 74 allows the displacement of cable 65 and consequently the lowering of the slide 67 in its guide. A rotation stop at 69 prevents the rotation of ribs 68 and 70 towards the lid 7. Point 69 reaches point 69'. The lid 7 can now be closed to the lesser distance 59–68' obtained previously by closing lid 8. In its rotation around point 59 the lid 7 allows the rotation of rib 70 around 71 and that of rib 68 around rib 69'.

To unfold: — the pivoting movement of lid 7 moves ribs 68 and 70, and that of lid 8 around 58 moves ribs 63 and 62. By the intermediary of cable 65, slide 67 is drawn upwards as well as the ribs 68 and 70 which cause the stretching of the canvas. In the construction of the mechanism an alternative arrangement may be envisaged as shown in FIG. 10. The pulley 64 is connected to rib 62 through a connecting rod 75. The working remains the same as previously.

I claim:

1. A collapsible camper tent comprising:
an open top box-like body having lateral walls,
two lids connected to said body and to said tent for closing and opening said body, said lids being in substantial horizontal alignment when said body is closed and in substantial horzontal alignment when said tent is erected, said lids mounted for rotation about an upper portion of opposite lateral walls,
a plurality of U-shaped ribs comprising two straight rod sections connected together at one end, said ribs rotatably connected about said body for forming a framework for supporting the tent, said framework, when erected, having a first and second rib positioned in a substantially vertical position and a third and fourth rib positioned in a substantially diagonal position,
first means for connecting the rotation of one of said lids to the rotation of said third rib and for connecting the rotation of the other of said lids to the rotation of said fourth rib, and
second means for connecting the rotation of said third rib to the rotation of said first rib and for connecting the rotation of said fourth rib to the rotation of said second rib,
whereby upon closing said lids, said framework automatically collapses for storage within said body, and upon opening said lids substantially 180 degrees, said framework is erected for supporting the tent.

2. A collapsible camper tent as recited in claim 1 wherein said third and fourth ribs are rotatably connected to said first and second ribs respectively and wherein said first and second ribs are rotatably connected to said body.

3. A collapsible camper tent as recited in claim 2 wherein said third rib is pivotally and slidably connected to said first rib.

4. A collapsible camper tent as recited in claim 2 further comprising :
a fifth rib having a substantially vertical position upon erecting said tent,
two additional extension rods, said extension rods rotatably connected to the other end of said rod sections of said fifth rib, said extension rods rotatably mounted on said body, and
third connecting means for connecting the rotation of said fifth rib to the rotation of said first and second ribs.

5. A collapsible camper tent as recited in claim 4 wherein said third connecting means comprises:
cable means for connecting said first rib to one of said additional extension rods of said fifth rib whereby the rotation of said first rib automatically rotates said one extension rod and said fifth rib rotates in the opposite direction of said one extension

rod for collapsing said framework within said body and for erecting said framework to support the tent.

6. A collapsible camper tent as recited in claim **5** wherein said fourth rib is rotatably connected to said second rib by additional arms, said additional arms rotatably connected to the other end of said rod sections of said fourth rib and to said rod sections of second rib, said camper further comprising cable means for connecting said additional arms to said body and to said other lid whereby said additional arm is stabilized upon erection of said tent.

7. A collapsible camper tent as recited in claim **1** further comprising:

a fifth rib having a substantially vertical position upon erection of said tent,

two additional extension rods, said additional extension rods rotatably connected to the other end of said rod sections of said fifth rib, said extension rods rotatably mounted on said body, and

third connecting means for connecting the rotation of said fifth rib to the rotation of said first and second ribs.

8. A collapsible camper tent as recited in claim **7** further comprising:

cable means connecting said first rib to one of said additional extension rods of said fifth rib whereby the rotation of said first rib automatically rotates said one extension rod and said fifth rib rotates in the opposite direction of said one extension rod for collapsing said frame-work within said body and for erecting said framework to support the tent.

9. A collapsible camper tent as recited in claim **1** wherein said body has a first pair of opposite lateral walls and a longer second pair of opposite lateral walls and wherein said lids are connected to said longer lateral walls and said lids overlap in the closed position.

10. A collapsible camper tent as recited in claim **9** further comprising:

a fifth rib having its rod sections pivotally connected to upper portions of the rod sections of said second rib, and

means for supporting said fifth rib in a diagonal position for supporting said tent.

11. A collapsible camper tent as recited in claim **10** wherein said supporting means comprises two arms having one end of each arm pivotally connected to an upper portion of the rod sections of said first rib whereby upon erection of said tent the arms are rotatable for connection to said fifth rib.

12. A collapsible camper tent as recited in claim **11** further comprising:

means for holding said fifth rib adjacent to and substantially parallel to said second rib, and means for holding each arm adjacent to and substantially parallel to said first rib.

13. A collapsible camper tent as recited in claim **12** wherein said first and third ribs are rotatably mounted on said one lid and said second and fourth ribs rotatably mounted on said other lid.

14. A collapsible camper tent as recited in claim **1** further comprising:

cable means for connecting together first and second ribs,

two additional extension rods rotatably connected to said other end of said rod sections of said first rib, and

guide means for slidably and vertically supporting said two additional extension rods,

whereby said extension rods are raised in a vertical direction upon opening said other of said lids and lowered in a vertical direction upon closing the other of said lids.

15. A collapsible camper tent as recited in claim **14** wherein said second and fourth ribs are pivotally connected to the other of said lids and wherein said cable means comprise a pulley rotatably connected to said second rib.

16. A collapsible camper tent as recited in claim **15** wherein said third rib is rotatably connected to said first rib.

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