Jan. 30, 1962 R. K. TYSON 3,018,783

COLLAPSIBLE SHELTER DEVICE

Filed March 6, 1959 2 Sheets-Sheet 1

Fig. 1.

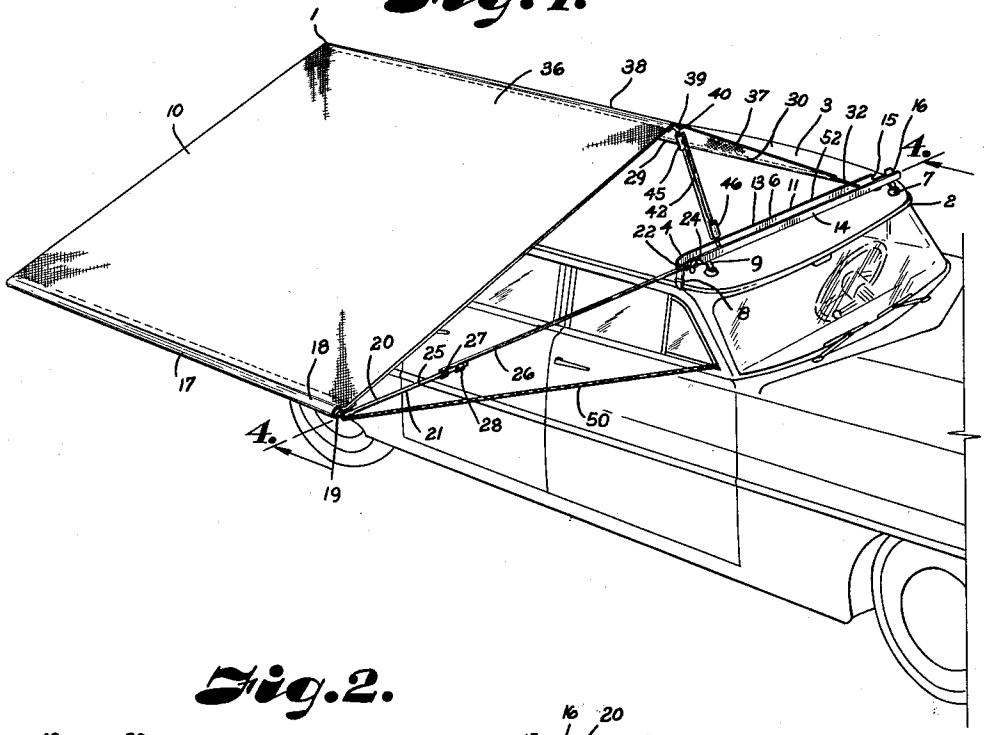


Fig. 2.

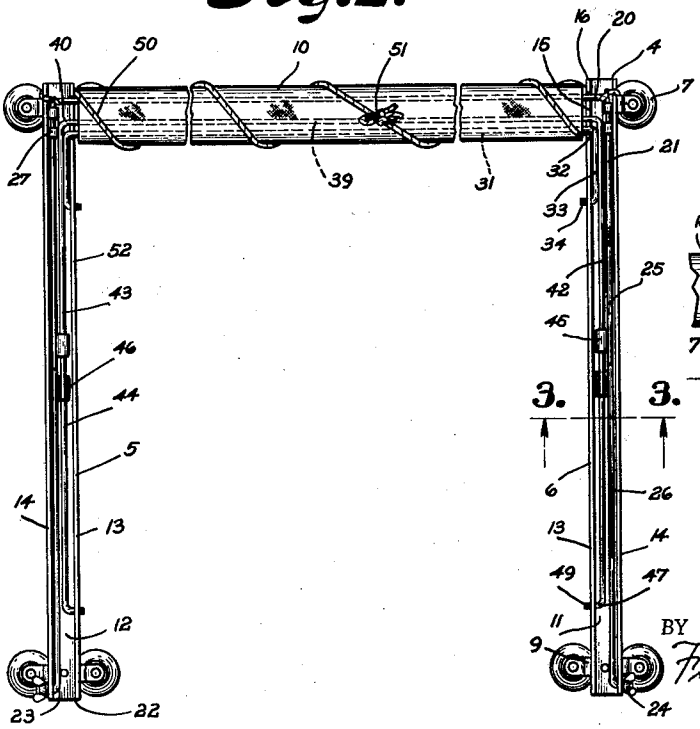
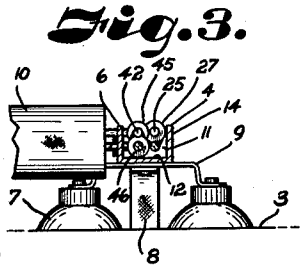


Fig. 3.



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Fig. 4.

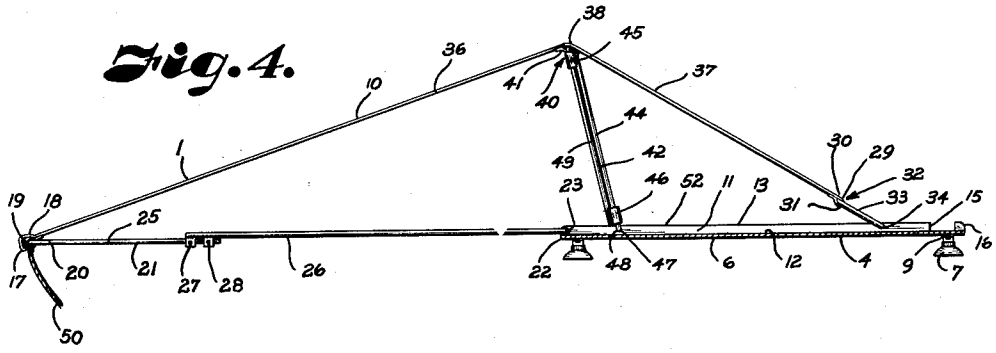


Fig. 5.

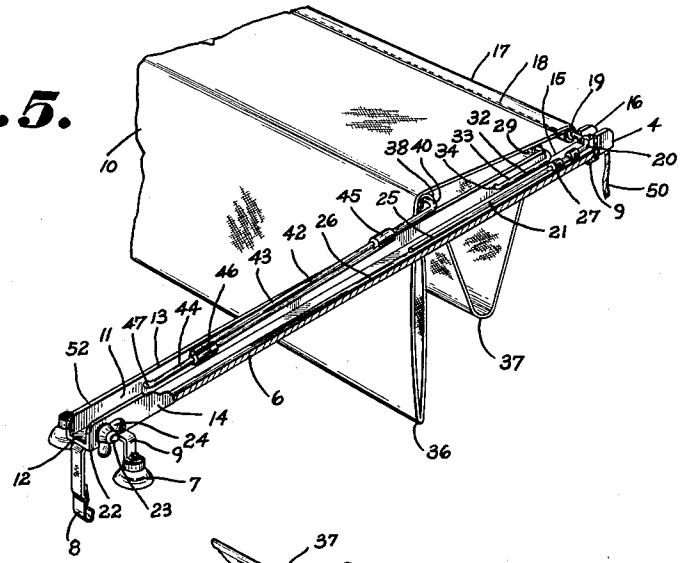
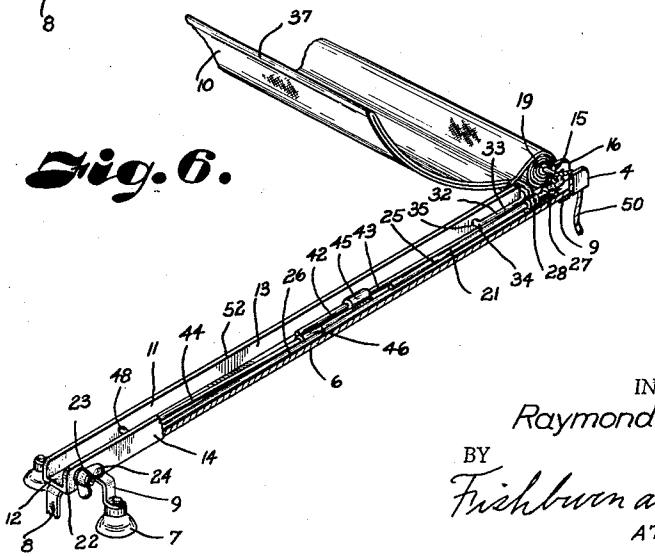


Fig. 6.



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COLLAPSIBLE SHELTER DEVICE

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6 Claims. (Cl. 135—5)

This invention relates to awnings and tent-like shelters, and more particularly to collapsible awning shelters or shades for mounting on supporting members or vehicles such as automobiles, boats, trailers and the like.

The principal objects of the present invention are to provide a shelter of flexible sheet material carried by foldable members mounted on a suitable frame or supporting members; to provide such a shelter for extending from the top of a vehicle where the shelter is supported by foldable members carried by frame members mounted on the vehicle top; to provide such a shelter that is collapsible to a compact carrying package which permits the frame members to serve as a vehicle top luggage carrier; to provide such a shelter wherein the foldable members are substantially U-shaped hoops pivotally mounted on the frame members; to provide such a structure wherein certain of said hoop members have extendable leg portions to lengthen the shelter or increase the area covered thereby and that when collapsed lie flat in channel frame members; to provide such a shelter with a flexible cover sheet supported in spaced angular relation to a vehicle top by spaced pivotally mounted U-shaped members which swing upwardly and outwardly to project a portion of said cover outwardly from the vehicle with one of said members inclined upwardly to form a ridge in said cover; to provide such a shelter with substantially U-shaped hoop members with one having extendable leg portions and another having contractable leg portions from their collapsed position whereby the covered area is extended from the support and the height thereof is decreased to substantially the collapsed length of the contracted leg portions; to provide such a shelter with flexible members for tying the cover in collapsed position that also serve as anchors for the extended portion when in erected position; to provide such a structure that is carried by the vehicle and independent of the ground for anchoring; and to provide such a collapsible shelter that is economical to manufacture, easily mounted and erected to form an extending shelter of substantial magnitude.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a perspective view of a vehicle with the shelter of the invention in its erected position.

FIG. 2 is a plan view of the shelter device in collapsed transportable position.

FIG. 3 is a sectional view through the collapsed shelter taken on the line 3—3, FIG. 2.

FIG. 4 is a transverse sectional view through the shelter in erected position taken on the line 4—4, FIG. 1.

FIG. 5 is a partial perspective view showing the shelter in partially collapsed position with portions broken away to illustrate the structure thereof.

FIG. 6 is a partial perspective view similar to FIG. 5 with the covering in partially wrapped position for preparing the shelter for transportation position.

Referring more in detail to the drawings:

1 designates a collapsible shelter adapted to be mounted or carried on a support 2. While the shelter is adapted to be used in connection with trailers, boats and the like, in the illustrated structure, the support 2 is a vehicle such as an automobile having a top or roof section 3.

Mounted on the top 3 is a frame or rack 4 which includes spaced elongated rigid members or rails 5 and 6. The rigid frame members are supported and secured to the supporting structure by any suitable mounting means which, in the illustrated structure, consists of suction cup devices 7 and tie or hook straps 8 as are generally used for luggage carriers and the like. The suction cup devices, as illustrated, are arranged with the cups in pairs wherein the cups of each pair are connected by a bracket 9 connected to the rigid members 5 and 6 adjacent the ends thereof whereby the rigid members or rails are supported in upwardly spaced relation to the top 3 of the vehicle and extend transversely thereof.

A cover sheet 10 of flexible material such as canvas is carried on a plurality of substantially U-shaped hoop members, each of which is suitably swingably connected to the frame 4, and while the frame members 5 and 6 may be of any desired form and will serve as luggage carriers when the shelter is in collapsed condition for transporting, it is preferred that said rigid frame members 5 and 6 be of substantially channel shape with an upwardly opening channel or through 11 extending longitudinally of the respective members. In the illustrated structure, the members 5 and 6 each have a substantially horizontal web 12 with flanges 13 and 14 extending upwardly from the side edges thereof to define the channel or trough 11 therein. The adjacent or inner flanges 13 of the respective members 5 and 6 are preferably cut away or notched to define an opening 15 adjacent the ends 16 to aid in supporting the hoop-like members when in collapsed position, as later described.

One end edge portion 17 of the cover 10 is turned upon itself to define a hem or loop 18 through which extends a bar 19 of a U-shaped hoop-like member 20 which has leg portions 21 extending substantially in parallel relation from the ends of the bar 19. The free ends of the leg portions 21 of the U-shaped hoop 20 are pivotally connected to the respective frame members 5 and 6 adjacent the ends 22 thereof. In the illustrated structure, the spacing between the leg portions 21 is slightly less than the spacing between the outer flanges 14 of the frame members 5 and 6 whereby said leg portions will lie in the troughs 11, and the free ends are turned outwardly to form trunnions 23 that extend through bearing openings in the flanges 14 to swingably mount the hoop-like member 20. The extending portions of the trunnions 23 on the leg portions are preferably threaded, and wing nuts 24 screwed thereon to tighten the leg portions against the flanges 14 to aid in holding the hoop-like member in place either in shelter erected position or collapsed position.

The leg portions 21 are of such length that the bar 19 is positioned in the end of the opening 15 adjacent the frame member ends 16 when in shelter collapsed position, and while such length will provide a substantial extended shelter area when the shelter is erected, it is preferred that the leg portions 21 consist of slidably connected sections 25 and 26 for further extension or elongation when in erected position. In order to form the slidable connections, sleeve members 27 are secured to the section 26 adjacent the end thereof remote from the pivotal connection and the leg section 25 is sleeved or slidably mounted in said sleeves. Suitable fastening devices such as set screws 28 are arranged in the sleeves 27 and are engageable with sections 25 to secure said sections 25 in selected position relative to the respective leg section 26. The other end edge portion 29 of the cover 10 is folded upon itself and secured to form a loop 30 through which extends a bar 31 of a U-shaped hoop-like member 32 which has leg portions 33 extending from the ends of the bar portion in substantially parallel relation with the free ends turned inwardly to form trunnions 34 extend-

ing through apertures 35 in the flanges 13 of the frame members to pivotally mount the U-shaped hoop member 32 to the frame whereby when in collapsed position the bar 31 will be in the openings 15 adjacent the ends thereof opposite from the position of the bar 19 of the hoop member 20, as illustrated in FIG. 2, and when in erected position said hoop member will swing upwardly toward the opposite side of the support or vehicle to further space the edge portion 29 from the top 3 providing some flexibility to the mounting of the end edge 29 and also to permit the use of less material in the shelter cover 10.

An intermediate portion of the cover 10 is supported whereby the portions 36 and 37 on opposite sides thereof are arranged in angular relation when in erected position, as illustrated in FIG. 4. It is preferable that the ridge 38 of the cover when in erected position be substantially over the ends 22 of the rigid frame members 5 and 6. A bar portion 39 of an intermediate U-shaped hoop member 40 is suitably and preferably pivotally secured to the cover 10 at the ridge portion 38. In the illustrated structure, said bar 39 extends through an opening formed by a strip 41 of flexible material such as canvas suitably secured or sewed to the under surface of the cover 10 at the ridge portion 38. Leg portions 42 extend in parallel relation from the ends of the bar 39 of the hoop member 40 and said leg portions are preferably formed of slidable sections 43 and 44 to form members that are contractable in length from the collapsed position to the erected position. In the illustrated structure, the leg portion 43 is slidably mounted in a sleeve 45 secured as by welding to the end of the leg section 44 with the other end portion of the leg section 44 slidably extending through a sleeve 46 secured as by welding to the free end portion of the leg section 43. The ends of each leg section 44 remote from the bar 39 are turned inwardly to form trunnions 47 pivotally connected to the rigid frame members 5 and 6 by having said trunnions extending through apertures 48 in the flanges 13 adjacent to but spaced from the ends 22 of the members 5 and 6, as illustrated in FIGS. 2 and 4. Suitable fastening devices such as cotter pins 49 are arranged in the ends of the trunnions of the leg portions of the U-shaped hoops 32 and 40 to retain said trunnions in their pivotal connection with the frame members. The leg portions 33 of the hoop member 32 are adjacent to the flanges 13, and the leg portions 42 of the hoop member 40 are spaced whereby they lie between the leg portions 21 and leg portions 33 in the respective troughs, and the extended length of the contractable leg portions 42 is such that the bar 39 is positioned between the bars 19 and 31 when the shelter is in collapsed position, as illustrated in FIG. 2, for transportation, but the height of the shelter at the ridge will be reduced as is illustrated in FIG. 4 when in erected position.

Flexible members such as ropes 50 are secured to the end portions of the bar 19 to serve as a fastening means to aid in holding the cover and members in collapsed position, as illustrated in FIG. 2. It is preferable that the structure be arranged for transportation as illustrated in FIG. 2 wherein the hoop members are arranged with the bars thereof extending through the openings 15 and the leg portions lying in the troughs 11. The flexible cover member 10 is wrapped or rolled about the bars, and then the ropes wound therearound with the ends of the ropes tied as at 51. Also, the troughs 11 are preferably of such depth that the leg portions of the respective hoop-like members lie in the troughs below the upper edges 52 of the flanges 13 and 14 whereby the frame members 5 and 6 may be used for securing luggage thereto in a conventional manner.

When it is desired to erect the shelter, the ropes 50 are untied and the free ends thereof moved to the opposite side of the vehicle. Then, by pulling on the free ends of the ropes, force is applied to the bar member 19 of the U-shaped hoop member 20 to swing same upwardly relative to the frame 4. This causes the shelter sheet 10 to unwind permitting further swinging movement of the U-shaped member 20 toward the opposite side of the vehicle. This movement also applies force to the U-shaped hoop 40 and swings same upwardly, and during said upward movement the leg portions 42 contract to the length illustrated in FIG. 4. Further movement also swings the U-shaped hoop member 32 upwardly and toward the opposite side of the vehicle, as illustrated in FIG. 4. Then the leg portions 21 are extended to their maximum length and the set screws 28 tightened to hold same in the extended position. If desired, the ropes 50 may be secured to a suitable portion of the vehicle to prevent wind or the like from swinging the hoop member 20 upwardly. This arrangement for supporting the flexible shelter cover 10 maintains same substantially in taut condition when erected without the use of any connections to the ground or other anchor independent of the vehicle or shelter support. Also, the shelter extends from the support to provide an extending shelter of substantial magnitude, and further has the portion 37 of the shelter over the support or vehicle to provide added protection from the weather.

In collapsing the shelter, the ropes 50 are unfastened, the set screws 28 loosened, and the leg portions 21 contracted. Then the U-shaped hoop members 20 and 32 are swung to collapsed position and the hoop 40 swung downwardly until the bar 39 thereof rests on the flanges 13 as illustrated in FIG. 5. Then the leg portions 42 are extended until the bar portion 39 is positioned to extend through the openings 15, and then the sheet 10 can be rotated around the bar 19 to roll same thereon or otherwise wound around the bars of the U-shaped hoop members to provide a neat wrap and the ropes 50 wound thereover and tied, as illustrated in FIG. 2.

It is to be understood that while I have illustrated and described one form of my invention, it is not to be limited to the specific form or arrangement of parts herein described and shown except insofar as such limitations are included in the claims.

What I claim and desire to secure by Letters Patent is:

1. A collapsible and extensible shelter device comprising, a support frame including spaced elongate parallel rails, a plurality of generally U-shaped hoops each including spaced leg members and a bar connecting the leg members at one end, said bars each being of a length substantially corresponding to the spacing of said rails, each of said hoops having free ends of its respective leg portions pivotally mounted on said rails, the leg portions of the respective hoops being of different lengths with the pivotal mounting of the free ends of said leg portions having different spacing longitudinally of said rails and the pivotal mounting of one hoop being adjacent one end of said rails and in collapsed positions the bars of each of the hoops are adjacent the other end of the rails and the leg portions are substantially longitudinally of said rails, the leg portions of one of the other hoops having slidably connected sections for contracting the length of said leg portions, and an elongate flexible means having one end connected to the bar of said one hoop having pivotal mounting of its leg portions adjacent said one end of the rails and having the other end connected adjacent the other end of said rails with an intermediate portion connected to the bar of the hoop having slidably connected leg sections, said flexible means being of a length to be taut and cooperate with said hoops to support same when said hoops are swung to erected position wherein the hoop with the slidably connected leg sections has same contracted and said one hoop extends substantially horizontally outwardly from said one end of the rails.

2. A collapsible and extensible shelter device comprising, a support frame including spaced elongate parallel rails, a plurality of generally U-shaped hoops each including spaced leg members and a bar connecting the leg members at one end, said bars each being of a length sub-

stantially corresponding to the spacing of said rails, each of said hoops having free ends of its respective leg portions pivotally mounted on said rails, the leg portions of the respective hoops being of different lengths with the pivotal mounting of the free ends of said leg portions having different spacing longitudinally of said rails and the pivotal mounting of one hoop being adjacent one end of said rails and in collapsed positions the bars of each of the hoops are adjacent the other end of the rails and the leg portions are substantially longitudinally of said rails, the leg portions of one of the other hoops having slidably connected sections for contracting the length of said leg portions, and an elongate flexible means having one end connected to the bar of said one hoop having pivotal mounting of its leg portions adjacent said one end of the rails and having the other end connected to the bar of the hoop having the pivotal mounting of its leg portion nearest the other end of said rails, said flexible means having an intermediate portion connected to the bar of the hoop having slidably connected leg sections, said flexible means being of a length to extend over the bars of the hoop in taut condition for cooperating with said hoops to support same when said hoops are swung to erected position wherein the hoop with the slidably connected leg sections has same contracted and the bar thereof substantially above said one end of said rails and said one hoop extends substantially horizontally outwardly from said one end of the rails.

3. A collapsible and extensible shelter device comprising, a support frame including elongate rigid members in spaced parallel relation, said rigid members having upwardly opening channels extending longitudinally thereof, a plurality of generally U-shaped hoops each including spaced leg members and a bar connecting the leg members at one end, said bars each being of a length substantially corresponding to the spacing of the channels in said spaced rigid members for said leg portions to lie in said channels with the bars extending therebetween adjacent one end of the rigid members when the hoops are in collapsed position, each of said hoops having free ends of its respective leg portions pivotally mounted on said rigid members, the leg portions of the respective hoops being of different lengths with the pivotal mounting of the free ends of said leg portions having different spacing longitudinally of said rigid members and the pivotal mounting of one hoop being adjacent the other end of said rigid members, the leg portions of one of the other hoops having slidably connected sections for contracting the length of said leg portions, and an elongate flexible means having one end connected to the bar of said one hoop having pivotal mounting of its leg portions nearest said one end of the rigid members and having the other end connected to the bar of the hoop having the pivotal mounting of its leg portions adjacent the other end of said rigid members, said flexible means having an intermediate portion connected to the bar of the hoop having slidably connected leg sections, said flexible means being of a length to extend over the bars of the hoops in taut condition for cooperating with said hoops to support same when said hoops are swung to erected position wherein the hoop having its leg portions pivotally mounted nearest said one end of the rigid members is inclined upwardly and toward said other end of the rigid members and the hoop with the slidably connected leg sections has same contracted and the bar thereof substantially above said other end of said rigid members and said one hoop extends substantially horizontally outwardly from said one end of the rigid members.

4. A collapsible and extensible shelter for use with a vehicle having a roof comprising, a rack adapted for mounting on the roof of the vehicle and including spaced parallel elongate rigid members substantially horizontally arranged, said rigid members having upwardly opening channels extending longitudinally thereof, a plurality of generally U-shaped hoops each including spaced leg members and a bar connecting the leg members at one end, said bars being of a length substantially corresponding to the spacing of the channels in said spaced rigid members whereby said legs lie in said channels with the bars extending therebetween adjacent one end of said rigid members when the hoops are in collapsed position, each of said hoops having the free ends of its leg portions pivotally mounted on said rigid members, the leg portions of the respective hoops being of different lengths whereby the pivotal mounting of the free ends of said leg portions have different spacing longitudinally of said rigid members with the pivotal mounting of one hoop being adjacent the other end of said rigid members, and a flexible sheet covering secured at one edge adjacent said one end of the rigid members and secured at its opposite edge to the bar of the hoop having the pivotal mounting of its leg portions adjacent the other end of said rigid members, said covering having an intermediate portion connected to the bar of another hoop, said covering sheet being dimensioned to extend over the bars of the hoops in taut condition to cooperate with said hoops to support same when swung to erected position wherein said one hoop extends substantially horizontally outwardly from said other ends of the rigid members and the covered area extends from the vehicle and the intermediate portion of said covering sheet is in angular form.

5. A collapsible and extensible shelter for use with a vehicle having a roof comprising, a rack adapted for mounting on the roof of the vehicle and including spaced parallel elongate rigid members substantially horizontally arranged to define an area between said rigid members that is coextensive with a major area of the roof, said rigid members having upwardly opening channels extending longitudinally thereof, a plurality of generally U-shaped hoops each including spaced leg members and a bar connecting the leg members at one end, said bars being of a length substantially corresponding to the spacing of the channels in said spaced rigid members whereby said legs lie in said channels with the bars extending therebetween adjacent one end of said rigid members when the hoops are in collapsed position, each of said hoops having the free ends of its leg portions pivotally mounted on said rigid members, the leg portions of the respective hoops being of different lengths whereby the pivotal mounting of the free ends of said leg portions have different spacing longitudinally of said rigid members with the pivotal mounting of one hoop being adjacent the other end of said rigid members, another hoop having contractable leg portions from their respective collapsed position, a flexible sheet covering secured at one edge to the bar of the hoop having pivotal mounting of its leg portions nearest said one end of the rigid members and secured at its opposite edge to the bar of the hoop having the pivotal mounting of its leg portions adjacent the other end of said rigid members, said covering having an intermediate portion connected to the bar of the hoop having contractable leg portions, said covering sheet being dimensioned and secured to the hoop bars for wrapping around the bars at one end of said rigid members when the hoops are in collapsed position and to extend between the bars of the hoops in taut condition for cooperating with said hoops to support same when said hoops are swung to erected position wherein said one hoop adjacent said one end of the rigid members is inclined upwardly toward the other end of said rigid members and the hoop with the contractable leg portions have same contracted and the bar thereof positioned substantially above the other end of said rigid members and the other hoop extends substantially horizontally outwardly from said other ends of the rigid members to provide a covered area extending from the vehicle, and elongate flexible members connected to said other hoop for anchoring said hoop to the vehicle in shelter erected position and for wrapping around and securing the wrapped covering sheet when in collapsed position.

6. A collapsible and extensible shelter for use with a vehicle having a roof comprising, a rack adapted for

mounting on the roof of the vehicle and including spaced parallel elongate rigid members substantially horizontally arranged to define an area between said rigid members that is coextensive with a major area of the roof, said rigid members having upwardly opening channels extending longitudinally thereof, a plurality of generally U-shaped hoops each including spaced leg members and a bar connecting the leg members at one end, said bars being of a length substantially corresponding to the spacing of the channels in said spaced rigid members whereby said legs lie in said channels with the bars extending therebetween adjacent one end of said rigid members when the hoops are in collapsed position, each of said hoops having the free ends of its leg portions pivotally mounted on said rigid members, the leg portions of the respective hoops being of different lengths whereby the pivotal mounting of the free ends of said leg portions have different spacing longitudinally of said rigid members with the pivotal mounting of one hoop being adjacent the other end of said rigid members, said one hoop having extensible leg portions and another hoop having contractable leg portions from their respective collapsed position, a flexible sheet covering secured at one edge to the bar of the hoop having pivotal mounting of its leg portions nearest said one end of the rigid members and secured at its opposite edge to the bar of the hoop having the pivotal mounting of its leg portions adjacent the other end of said rigid members and said leg portions thereof extendable, said covering having an intermediate portion connected to the bar of the hoop having contractable leg portions, said covering sheet being dimensioned and secured to the hoop bars for

wrapping around the bars at one end of said rigid members when the hoops are in collapsed position and to extend between the bars of the hoops in taut condition for cooperating with said hoops to support same when said hoops are swung to erected position wherein said one hoop adjacent said one end of the rigid members is inclined upwardly toward the other end of said rigid members and the hoop with the contractable leg portions have same contracted and the bar thereof positioned substantially above the other end of said rigid members and the other hoop having the extensible leg portion extends substantially horizontally outwardly from said other ends of the rigid members with said leg portions extended to provide a covered area extending from the vehicle with portions of the covering in angular form and the maximum height above the vehicle, means securing the extendable leg portions in extended position there being a ridge at the bar of the hoop having contracted leg portions, and elongate flexible members connected to the end portions of the bar of the hoop having the extensible leg portions for anchoring said hoop to the vehicle in shelter erected position and for wrapping around and securing the wrapped covering sheet when in collapsed position.

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