A canopy has a frame with a plurality of legs for defining a main area of protection, an auxiliary leg for defining an auxiliary area of protection adjacent the main area of protection, the auxiliary leg capable of being removed and a roof frame supported by the uprights. A tarp, secured to the frame, has a main section for covering the main area, and an auxiliary section adjacent the main section. The auxiliary section is (i) extendable between the legs and the auxiliary leg to cover the auxiliary area, (ii) extendable between the legs and the support surface to provide additional cover to the main area as a wall, and (iii) storable such that only the main section covers the main area and the at least one auxiliary leg is removed.
SHELTER HAVING AN EXTENDABLE ROOF

CROSS-REFERENCE TO RELATED APPLICATIONS


BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The subject disclosure relates generally to shelters, and more particularly to an improved shelter that can provide additional protection when desired. Even more particularly, the subject disclosure relates to a shelter including a canopy that selectively extends.

[0004] 2. Background of the Related Art

[0005] Over the years, many tents and other shelters having collapsible frames have been introduced. Such structures are commonly used to provide shelter during camping trips, picnics, parties, military operations, and other outdoor activities. One advantageous feature of such structures is their ability to provide relief from weather elements when desired but allow removal when no longer needed.

[0006] However, prior art shelters have several problems. The shelters are unable to vary their configuration easily to suit varying demands. Some prior shelter frames also allow the overlying canopy to sag in an unsightly manner or be blown loose. Moreover, varying the configuration can be a challenging task even when multiple people are involved in the assembly task. In view of these apparent shortcomings, many attempts at overcoming these difficulties have been patented, such as: U.S. Pat. Nos. 4,779,635; 5,511,572; 5,555,681; 5,652,293; 5,638,853; 5,701,923; 5,797,412; 5,813,425; and 6,173,726 (each of which is incorporated herein by reference in their entirety).

[0007] U.S. Pat. No. 5,555,681 to Cawthon discloses a building system that is modular in that a plurality of differently shaped buildings 10, 12 may be constructed from the same basic part set. The foundation of the buildings 10, 12 includes base plates 14 and headers 16 that are oriented horizontally. Vertical stud members 18 extend vertically between the base plates 14 and headers 16. Connectors 22 couple the components 14, 16, 18 together. Rafters 20 also terminate within the connectors 22 to form a roof structure. Wall panels 24 and roof panels 26 enclose the buildings 10, 12 and are selectively extendible from and retractable into the respective associated base plate members 14 and headers 16. This is an essential purpose of the buildings of Cawthon to selectively store the panels 24, 26 to allow enjoyment of ambient weather. However, once the building takes shape, major effort is required to reconfigure the space. Thus, it would be desirable to build a shelter that can quickly and easily be modified to have additional space that is protected from the elements.

SUMMARY OF THE INVENTION

[0008] The present disclosure is directed to a canopy including a frame assembly including a plurality of legs upstanding from a support surface. A resilient tarp covers the frame assembly. The resilient tarp has a main section for substantially defining a main area of protection, an auxiliary section for substantially defining an auxiliary area of protection and an overhang. A plurality of cords attach the resilient tarp to the frame assembly in a plurality of positions including: i) a set up position wherein the main section substantially covers the main area and the auxiliary section is stored; and ii) a set up position wherein the main section substantially covers the main area, the auxiliary section substantially covers the auxiliary area, and at least one of the plurality of cords extends at least partially over the auxiliary area.

[0009] Another aspect of the invention is a canopy providing shelter on a support surface. The canopy includes a frame assembly with a plurality of legs for defining a main area of protection, two auxiliary legs for defining an auxiliary area of protection adjacent the main area of protection, and a roof frame supported by the plurality of uprights. A resilient tarp secures to the frame assembly. The tarp includes a main section for substantially covering the main area, and an auxiliary section adjacent the main section, wherein the auxiliary section is (i) extendible between the plurality of legs and the at least one auxiliary leg to substantially cover the auxiliary area, (ii) extendible between the plurality of legs and the support surface to provide additional cover to the main area, and (iii) storable such that only the main section substantially covers the main area.

[0010] Still another aspect of the invention is a canopy having a plurality of upright assemblies for defining a main area and an auxiliary area of protection, each upright having an interlocking male and female portion wherein the male portion includes at least one protruberance that causes at least one of the male and female portion to deform upon interlocking. A resilient tarp covering the main area and the auxiliary area whereby a plurality of cords attach the resilient tarp to the frame assembly in a plurality of positions including: i) a first position wherein the resilient tarp substantially covers the main area and the auxiliary area is exposed; and ii) a second position wherein the resilient tarp substantially covers the main area and the auxiliary area. Still another aspect of the invention is directed to a kit that allows a traditional canopy to be outfitted with an auxiliary area of protection.

[0011] It should be appreciated that the present invention can be implemented and utilized in numerous ways, including without limitation as a process, an apparatus, a system, a device, and a method for applications now known and later developed. These and other features of the system disclosed herein will become more readily apparent from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] So that those having ordinary skill in the art to which the disclosed system appertains will more readily understand how to make and use the same, reference may be had to the following drawings.

[0013] FIG. 1 is a perspective view of an assembled collapsible shelter having one auxiliary area covered in accordance with a preferred embodiment of the subject disclosure.

[0014] FIG. 2 is a perspective view of the frame assembly of the shelter of FIG. 1 with the auxiliary portion of the tarp serving as a wall.

[0015] FIG. 3 is a perspective view of the tarp of the canopy of FIG. 1.

[0016] FIG. 4 is a perspective view of the frame assembly of FIG. 1.

[0017] FIG. 5 is a portion of a leg assembly of the frame assembly of FIG. 4.
FIG. 6 is a localized view of the interconnection of a male portion and female portion of a leg assembly of the frame assembly of FIG. 4.

FIGS. 7A-C are varying possible cross-sectional views of the interconnection of the leg assembly of FIG. 6.

FIG. 8 is a localized view of the connection of the tarp to the frame for the canopy of FIG. 1.

FIG. 9 is a detailed view of a preferred corner of the tarp of the canopy of FIG. 8.

FIG. 10 is a localized view of an alternative connection of a tarp to a frame for a canopy in accordance with a preferred embodiment of the subject disclosure.

FIG. 11 is a localized view of another alternative connection of a tarp to a frame for a canopy in accordance with a preferred embodiment of the subject disclosure.

FIG. 12A is an end plan view of a clamp for a canopy in accordance with a preferred embodiment of the subject disclosure in a partially assembled state.

FIG. 12B is an end plan view of the clamp of FIG. 12A in an assembled state.

FIG. 12C is an inside plan view of the nut side of the clamp of FIG. 12A.

FIG. 12D is an inside plan view of the bolt side of the clamp of FIG. 12A.

FIG. 13 is an end plan view of another clamp for a canopy in accordance with a preferred embodiment of the subject disclosure in an assembled state.

FIG. 14A is an inside plan view of one portion of another clamp for a canopy in accordance with a preferred embodiment of the subject disclosure.

FIG. 14B is a cross-sectional view of the portion of FIG. 14A along line B-B.

FIG. 14C is a cross-sectional view of the portion of FIG. 14A along line C-C.

FIG. 15 is a perspective view of an assembled collapsible shelter having two auxiliary area covered in accordance with a preferred embodiment of the subject disclosure.

FIG. 16 is a localized view of still another alternative connection of a tarp to a frame for a canopy in accordance with a preferred embodiment of the subject disclosure.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention overcomes many of the prior art problems associated with canopies and temporary shelters. The advantages, and other features of the system disclosed herein, will become more readily apparent to those having ordinary skill in the art from the following detailed description of certain preferred embodiments taken in conjunction with the drawings which set forth representative embodiments of the present invention wherein like reference numerals identify similar structural elements. For simplicity and clarity throughout this disclosure, only enough reference numerals with tag lines that are sufficient for understanding have been shown.

Referring to FIG. 1, a canopy 100 in accordance with the present disclosure includes a frame assembly 102 for mounting a tarp 104 thereon. The tarp 100 provides shelter from the elements yet can be easily erected and modified for varying the amount and configuration of protection from weather elements. The tarp 100 is shown in the raised, unfolded or “set-up” position with the tarp 104 fully extended. As a result, two areas of protection result: i) the main section 106; and ii) the auxiliary section 108. A main portion 110 of the tarp 104 covers the main section 106 and another auxiliary portion 112 covers the auxiliary section 108. Preferably, the tarp 104 also includes a hem or overhang portion 111. In another embodiment, the overhang portion 111 extends the full length of the tarp 104.

Referring now to FIG. 2, the tarp 104 is arranged so that the canopy 100 only provides protection for main section 106. As shown, the auxiliary portion 112 of the tarp 104 that alternatively covers the auxiliary section 108 becomes a wall for the canopy 100. When configured as a wall, the auxiliary portion 112 may attach to the frame assembly 102 by cords, attach to another portion of tarp such as an adjacent wall by a zipper and like.

In a preferred embodiment shown in FIG. 3, the auxiliary portion 112 of the tarp 104 is detached from the main portion 110 when not desired. As a result, the canopy 100 appears like a traditional prior art canopy. The means for detaching the auxiliary portion 112 may be a combination of hook/loop fabric, snaps, clips, straps and holes, a zipper, and like. In other embodiments, the auxiliary portion 112 is rolled or folded at suspended from the frame assembly 102 in a substantially concealed manner. The tarp 104 may be formed of any of a number of different transparent, translucent, and/or opaque materials such as canvass, non-woven sheets or woven fabric materials. Plastic may also be used to form the canopy, as desired, and the canopy may include a design or designs thereon (not shown), depending upon the nature of the material used for the canopy and other factors.

Referring to FIG. 4, the frame assembly 102 includes eight leg assemblies 109 adapted to rest on a support surface to substantially define the main section 106 and support a roof assembly 114. For example, it should be understood that the frame assembly 102 and, thereby the canopy 100, according to the subject disclosure may include more or less than eight leg assemblies 106 to form configurations other than cubic and the like. Preferably, each of the leg assemblies 109 is the same. The roof assembly 114 includes a plurality of 3-way connectors 116 and 4-way connectors 118 for interconnecting horizontal and angled rails 120 upon the leg assemblies 109.

Referring again to FIG. 1, additional auxiliary leg assemblies 113 are required in order to further support the auxiliary portion 112. Preferably, auxiliary cords 132 and anchors 134 are attached to the auxiliary leg assemblies 113 and the auxiliary portion 112 attaches to the leg assemblies 113 to further support the canopy 100. In another embodiment, the cords 132 are only attached to the auxiliary portion 112 and in another, the cords 132 are attached to the leg assemblies 113 and the tarp 104. It is envisioned that intermediate the leg assemblies 113, the auxiliary portion 112 may forms a plurality of troughs for desirably channeling rainwater off the sides of the shelter 100. Each of the frame assembly components is preferably formed of a plastic material. It has been found that polyvinyl chloride (pvc) plastics, particularly in high density configuration, are excellent for use in the manufacture of the components of the present structure because pvc plastics are impervious to corrosion and hold up well in extremes of loading, sunlight, weather, and other conditions. Other materials, such as powder coated metal tubing, may be substituted for the above pvc or other plastics, as desired.

Referring to FIGS. 5 and 6, the leg assemblies 109, 113 and rails 120 preferably include multiple portions 122. Each portion 122 may terminate in a smaller neck 124 to
facilitate insertion and coupling. Further, to interlock the portions 122, protuberances 126 are formed in the inner radius of a portion 122. It is also envisioned that the 3-way connectors 116 and 4-way connectors 118 may utilize protuberance advantageously as well. In a preferred embodiment, the protuberances form a line and are spaced half an inch apart along the line and equidistant around the circumference. In another embodiment, there is only a single line of three protuberances. In still another embodiment, only a single protuberance is required. Alternatively, the location and number of protuberances may be varied as would be appreciated by those of ordinary skill in the art based upon review of the subject disclosure.

[0041] Referring now to FIG. 7A, when the portions 122 have substantially equivalent wall thickness, the protuberances 126 cause each portion 122 to deform. The portion deformation creates tension that allows for easy assembly and disassembly of the portions. When the outer portion 122 has a thicker wall compared to the inner portion 122, an edge with the deformation is largely isolated to the inner portion as shown in FIG. 7B. Conversely, when the inner portion 122 has a thicker wall compared to the outer portion 122, the deformation is largely isolated to the outer portion as shown in FIG. 7C.

[0042] Referring to FIGS. 8 and 9, after assembling the frame assembly 102, the tarp 104 is secured thereto. It will be appreciated by those of ordinary skill in the art that each corner of the canopy 100 includes an arrangement as shown in FIG. 8. In a preferred embodiment, the tarp 104 is attached to the frame assembly 102 by a plurality of cords 128, 130. The cords 128, 130 pass through a sleeve (not shown) formed in the overhang portion 111 of the tarp 104. Cord 128 passes out of the sleeve and secures the main portion 110 to the frame assembly 102. Means for attaching the cords 128, 130 to the frame assembly are shown in U.S. Pat. No. 6,367,495 issued Apr. 9, 2002, U.S. patent application Ser. No. 10/282,283 filed Oct. 28, 2002 and the applications noted above, each of which is incorporated herein by reference.

[0043] As best seen in FIG. 9, additional fabric in the corners of the overhang portion 111 is layered to provide strength and form an edge sleeves 140. The edge sleeves 140 extend to the end of the overhang portion 111. Although cord 128 exits the sleeve substantially above the main section 106, cord 130 passes through an edge sleeve 140 of the main portion substantially above the auxiliary section 108. The cord 130 is also secured to the frame assembly 102. As a result, the tarp 104 is attractively and effectively retained against the frame assembly 102. In another embodiment, the cords 128, 130 are elastic and/or attach within holes formed in the frame assembly 102. In another embodiment, the separately formed auxiliary portion 112 is directly dashed or otherwise secured to the frame assembly 102. In the embodiment where the overhang portion 111 extends the full length of the tarp 104, a cord secures the auxiliary section 112 to a leg assembly 113. In still another embodiment, only cord 128 is used to secure the tarp 104.

[0044] Referring now to FIG. 10, an alternative method for securing a corner of the main portion 110 to the frame assembly 102 is shown. The cords 128, 130 attach to an eye-hook 160. However, cord 130 does not pass the entire length of the main portion 110. Instead, cord 130 merely passes through the edge sleeve 140 so that both ends of the cord 130 attach to the eye-hook 160. Thus, cord 130 forms a short loop through the edge sleeve 140 for securing the tarp 104 to the leg assembly 109 at the corner. In another embodiment, a single cord 128 exits normally, secures to the eye-hook 160 then passes through the edge sleeve 140 so that the short loop is accomplished with a single cord. In still another embodiment, the single cord 128 passes first through the edge sleeve 140 to the eye-hook 160 and is secured thereto. A remaining portion of the single cord 128 then is passed through the edge sleeve 140 again to further strengthen the attachment of the tarp 104 to the frame assembly 102.

[0045] Referring to FIG. 11, a valence 240 serves to prevent water from passing between the main portion 210 and the auxiliary portion 212. In one embodiment, the valence 240 forms a gutter to channel water off the front and back corners of the main portion. In another embodiment, the valence 240 forms a pocket for retaining a cord for further attachment to the leg assembly 213. Another alternative method for securing a corner of a main portion 210 to a canopy 200 is also shown in FIG. 11. As will be appreciated by those of ordinary skill in the pertinent art, the canopy 200 utilizes the same principles of the canopy 100 described above. Accordingly, like reference numerals preceded by the numeral “2” instead of the numeral “1” are used to indicate like elements whenever possible. As shown, a clamp 250 couples the cords 228, 230 together. In an alternative embodiment, the clamp 250 attaches directly to the main portion 210 of the tarp 204. In both embodiments, rope 230 and clamp 250 can be used to not only secure the tarp 204, but facilitate rerouting rope 228 during adding and removing the auxiliary portion 212.

[0046] Referring now to FIGS. 12A-D, the clamp 250 has opposing portions 252, 254 that form respective hollows 260 for receiving cords 228, 230. The opposing portions 252, 254 are coupled together by a pair of nuts 256 and bolts 258. To attach the clamp 250, the opposing sides 252, 254 are loosely coupled together and cords 228, 230 are passed through the hollows 260 as shown in FIG. 12A. The tarp 204 may or may not be included between the opposing portions 252, 254. Upon tightening the bolts 258, the cords 228, 230 are compressed and retained between the opposing portions 252, 254. As a result, the auxiliary portion 212 may be easily added to the main portion 210 because the cord 228 may serve the intended purpose of securing the outermost corner while the additional cord 230 secures the tarp 204 at the corner of the main portion 210. This provides the further benefit that the auxiliary portion 212 may be added to canopy 200 not originally intended to include the auxiliary portion 212.

[0047] The hollows 260 also include bumps or ridges 264 formed transverse to the cords 228, 230 to increase the holding retention thereon. The ridges 264 may be formed on one or both of the opposing sides 252, 254. Preferably, the opposing sides 252, 254 form a pathway 266 so that the cord 230 can centrally exit the clamp 250. As a result, the weight carried by the clamp 250 is evenly distributed. In the embodiment shown, the hollows 260 and pathways 266 are shaped and configured to receive cords having an 8 mm. diameter. It is envisioned that the side 252 may include depressions for insertion of the nuts 256 therein. The clamp 250 is preferably constructed from a strong plastic, aluminum or the like.

[0048] Referring to FIG. 13, another alternative clamp 350 sized for receiving 3 mm. cords is shown. As will be appreciated by those of ordinary skill in the pertinent art, the clamp 350 utilizes the same principles of the clamp 250 described above. Accordingly, like reference numerals preceded by the numeral “3” instead of the numeral “2” are used to indicate like elements whenever possible.
[0049] Referring to FIGS. 14A-C, still another alternative side 452 of a clamp is shown. As will be appreciated by those of ordinary skill in the pertinent art, the side 452 utilizes the same principles of the clamp 450 described above. Accordingly, like reference numerals preceded by the numeral “4” instead of the numeral “2” are used to indicate like elements whenever possible. The side 452 includes two pathways 466 for varying the point at which the cord 420 exits. Of course, the cord 420 may not exit via either pathway 466 as may be desired for the particular configuration.

[0050] Referring to FIG. 15, a perspective view of an assembled collapsible shelter 200 having two auxiliary areas 208 covered in accordance with a preferred embodiment of the subject disclosure is shown. As will be appreciated by those of ordinary skill in the pertinent art, the shelter 300 utilizes the same principles of the shelter 100 described above. Accordingly, like reference numerals preceded by the numeral “3” instead of the numeral “1” are used to indicate like elements whenever possible to simplify the subject description.

[0051] The auxiliary portions 312A, 312B include one or more stiffening ridges 350. The stiffening ridge 350 may be a seam sewn into the fabric, a rod inserted into a sleeve or the like. The purpose of the stiffening ridge 350 is to control the manner in which rainwater may collect on the auxiliary portion 312. On auxiliary portion 312A, the stiffening ridge 350 is shaped and formed to direct collected water towards the sides of the shelter 300. Alternatively on auxiliary portion 312B, the stiffening ridge 350 is shaped and formed to direct collected water towards the front of the shelter 300. Dashed lines 360 indicate a manner in which the auxiliary portions 312A, 312B sags to collect rainwater. Preferably, the auxiliary portions 312A, 312B sag to a certain point at which deformation occurs. During deformation, the water is released to allow the auxiliary portions 312A, 312B to substantially return to shape. In another embodiment, the auxiliary sections 312A, 312B do not have any stiffening ridges but are allowed to sag/collect water and deform to release. In still another embodiment, the outer legs 313 are relatively shorter than the inner legs 309. As a result, the auxiliary portions 312A, 312B are slanted to further increase the propensity of water to flow off to the sides of the shelter 300.

[0052] Referring now to FIG. 16, as will be appreciated by those of ordinary skill in the pertinent art, the canopy 400 utilizes the same principles of the canopies described above. Accordingly, like reference numerals preceded by the numeral “4” instead of the numerals “1”, “2” or “3” are used to indicate like elements whenever possible. A valence 440 serves to prevent water from passing between the main portion 410 and the auxiliary portion 412. To assemble the auxiliary section 412, a clamp 450 couples the cords 428, 430 together while the cord 428 is secured to the leg 413. Subsequently, the cord 428 can be released so that the valence 440 can be raised to rest on the auxiliary section 412 and prevent rain and wind from passing therebetween. The cord 428 may be passed onto the auxiliary section 412 as shown and, optionally coupled to the cord 428 from the opposing corner. Alternatively, the cord 428 is rolled for storage within the valence 440. It is envisioned that a plurality of mechanisms may serve the purpose of the clamp 450 as well as appreciated by those of ordinary skill in the pertinent art based upon review of the subject disclosure. In an alternative embodiment, the valence 440 includes a hole (not shown) reinforced with a grommet at the approximate location of the leg 413. As a result, the cord 428 can exit the valence 440 and secured to the tarp to the leg 413 while the very end of the valence 440 may still be raised onto the auxiliary portion 412.

[0053] It is envisioned that numerous variations are possible beyond those specifically described here and such would be apparent to those of ordinary skill in the art based upon review of the subject disclosure. For example, the canopy may have two auxiliary sections on opposing sides of the main section. Of course, either or both auxiliary sections may be completely detachable. For another example, the main section of the canopy may be octagonal with a plurality of auxiliary sections that are various shapes such as triangular, trapezoidal and the like.

[0054] While the invention has been described with respect to preferred embodiments, those skilled in the art will readily appreciate that various changes and/or modifications can be made to the invention without departing from the spirit or scope of the invention as defined by the appended claims.

1-20. (canceled)

21. An auxiliary kit that provides additional shelter, the auxiliary kit for use in combination with a shelter assembly, wherein the shelter assembly comprises (i) at least four legs and a plurality of rails all of which are coupleable to form a shelter structure; (ii) a tarp for covering the shelter structure, wherein the tarp has a first side corner section, a second side corner section, a first opposing side corner section and a second opposing side corner section, each of which is associated with a respective one of the at least four legs; and (iii) a cord section associated with the first side corner section, the second side corner section, the first opposing side corner section and the second opposing side corner section, wherein the securing of each cord section to its associated leg assists in maintaining the tarp in position when covering the shelter structure, wherein the auxiliary kit comprises:

- at least two auxiliary posts;
- at least one auxiliary tarp that is supportable and maintainable above the ground by and between the at least two auxiliary posts and the shelter assembly; and
- at least two clamping assemblies, wherein each clamping assembly comprises:
  - an auxiliary cord and a clamp;

wherein for the first clamping assembly, the clamp is secureable to the first side corner section and for the second clamping assembly, the clamp is secureable to the first opposing side corner section;

wherein when the auxiliary tarp is supported and maintained above the ground by and between the at least two auxiliary posts, the first side corner section is maintained secured to the shelter structure by at least one end of the auxiliary cord being secured to the clamp and the other end of the auxiliary cord being secured to the leg associated with the first side corner section; and the first opposing side corner section is maintained secured to the shelter structure by at least one end of the auxiliary cord being secured to the clamp and the other end of the auxiliary cord being secured to the leg associated with the first opposing side corner section; and

when the auxiliary tarp is to be secured to the shelter structure to provide a side wall to the shelter structure, the first side corner section is maintained secured to
the shelter structure by at least the cord section associated with the first side corner section being secured to the leg associated with the first side corner section and the first opposing side corner section is maintained secured to the shelter structure by at least the cord section associated with the first opposing side corner section being secured to the leg associated with the first opposing side corner section.

22. The auxiliary kit as claimed in claim 21, wherein when the at least one auxiliary tarp is supported and maintained above the ground by and between the at least two auxiliary posts and the shelter assembly
(i) the cord section associated with the first side corner section is left unsecured to the leg associated with the first side corner section and
(ii) the cord section associated with the first opposing side corner section is left unsecured to the leg associated with the first opposing side corner section.

23. The auxiliary kit as claimed in claim 21, wherein each post has an interlocking male and female portion wherein the male portion includes at least one protuberance that causes at least one of the male and female portion to deform upon interlocking.

24. The auxiliary kit as claimed in claim 21, wherein the tarp forms a valance parallel to the sides for preventing water from passing between a main section and an auxiliary area.

25. The auxiliary kit as claimed in claim 21, wherein the auxiliary tarp sags and deforms when water collects thereon, wherein the auxiliary tarp forms at least one stiffening ridge to define the point and is slightly slanted for creating areas of water flow.

26. The auxiliary kit as claimed in claim 21, wherein the auxiliary section includes a stiff ridge for shaping deformation of the auxiliary section when water collects thereon.

27. The auxiliary kit as claimed in claim 26, wherein the stiff ridge is selected from the group consisting of a seam sewn into the auxiliary section, a rod inserted into a sleeve formed in the auxiliary section, and combinations thereof.

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