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Walter Krummenacher, Bassersdorf (CH)(51) **Int. Cl.***A47C 17/64* (2006.01)*E04H 15/44* (2006.01)*A47C 17/86* (2006.01)*E04H 15/02* (2006.01)(52) **U.S. Cl.**CPC *A47C 17/64* (2013.01); *E04H 15/02*
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ABSTRACT

A sleeping system for use outdoors or in non-heated indoor spaces and includes a support structure and a sleeping unit, which is arranged underneath the support structure when in use and forms an access opening for at least one person. When in use, the sleeping unit is tensioned by a tensioning device having a tensioning unit directly or indirectly via the support structure such that the sleeping unit forms a body-accommodating space that is kept in shape by the tensioning device.

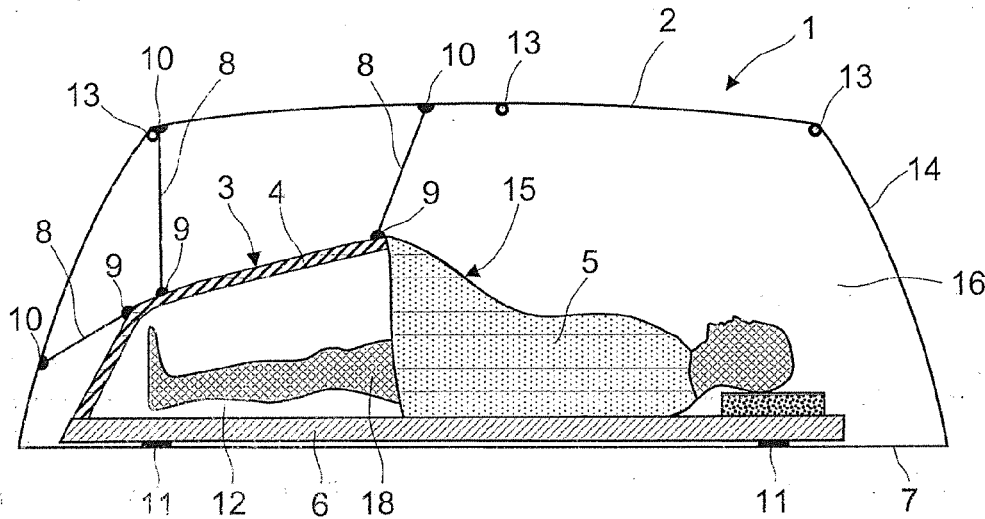


Fig. 1

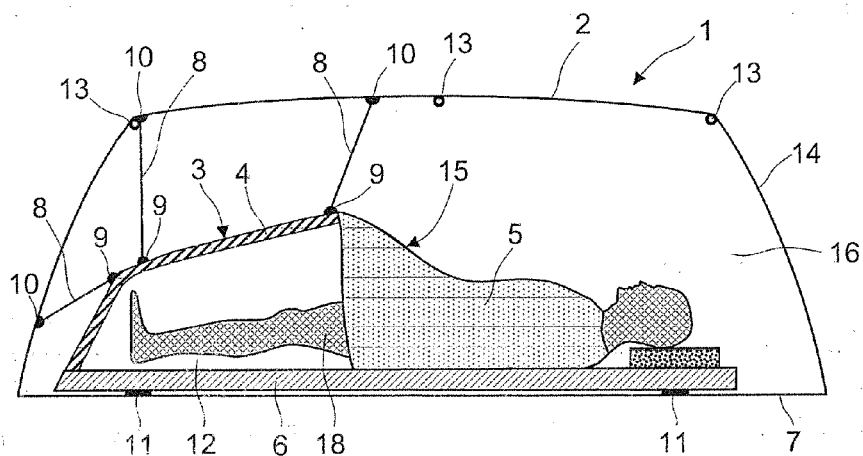


Fig. 2

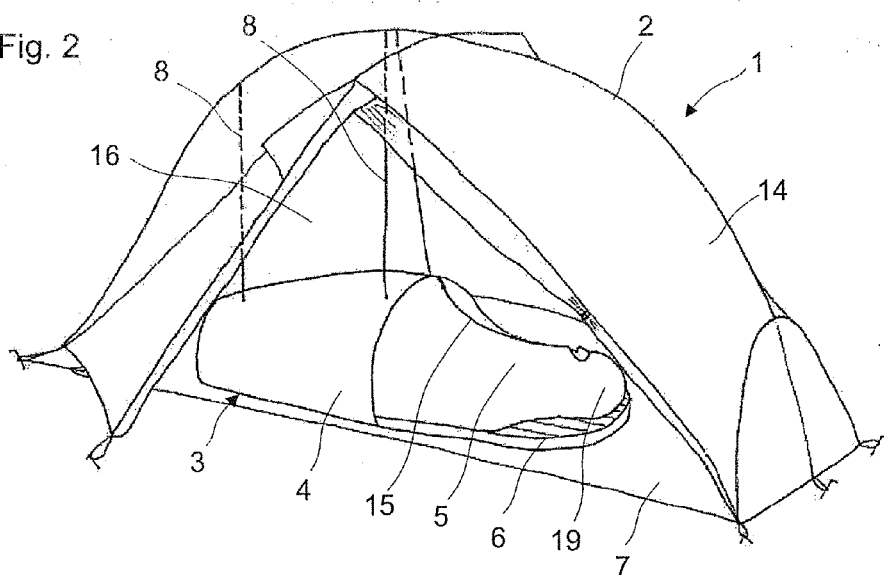


Fig. 3

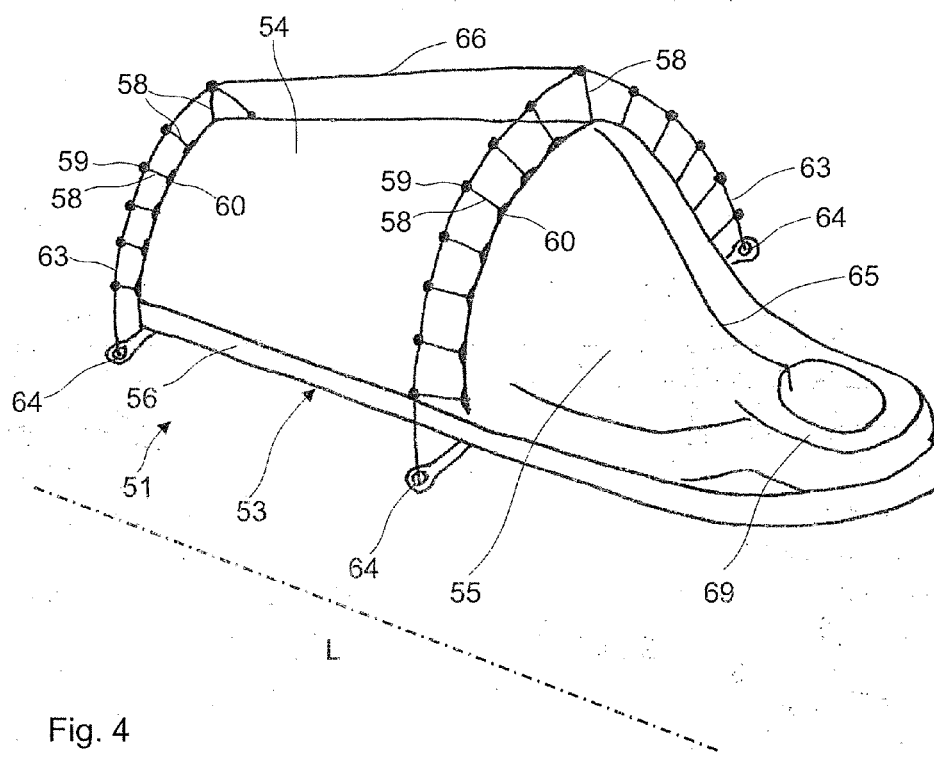


Fig. 4

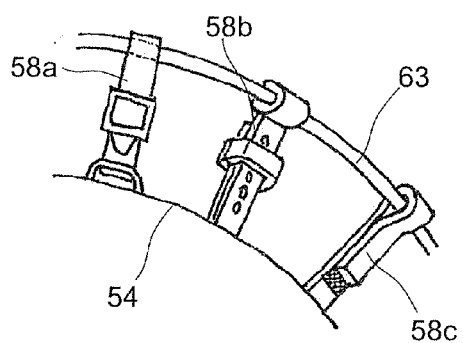
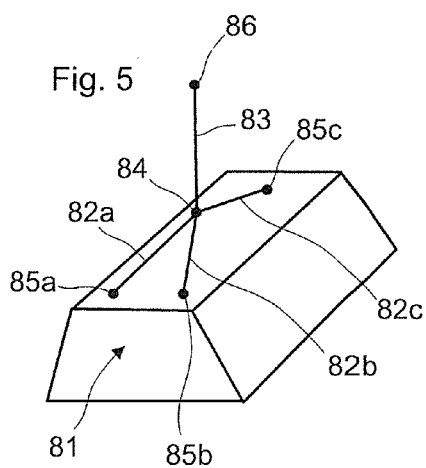


Fig. 5



SLEEPING SYSTEM

BACKGROUND OF THE INVENTION

[0001] Field of the Invention

[0002] The present invention generally relates to the field of outdoor equipment and, more particularly, toward a sleeping system for residing outdoors or in indoor premises, the sleeping system including a support structure and a sleeping unit that is arranged beneath the support structure on operation.

[0003] Description of Related Art

[0004] Indoor premises can be interiors of buildings, such as rooms or halls.

[0005] Tent accommodation serving for the protection of a person from the influences of the weather when residing outdoors is known. Such weather influences can be wind, downpour such as snow, hail or rain, as well as temperature conditions. Tent accommodation in particular should also serve for spending the night out in the open, and provide a sleeping person with sufficient protection from the mentioned influences of the weather.

[0006] Tent accommodation is used by the most different of groups of people. The use of tent accommodations for outdoor activities, such as trekking, mountain tours, expeditions etc. is of course known. Here, the tent accommodations permit an outdoor stay over several days, in regions, in which no fixed sheltered accommodation is otherwise available.

[0007] Tent accommodation is moreover also used for the homeless who for one reason or another, permanently or temporarily no longer have any fixed accommodation. Such homeless people can e.g. be people who can no longer live in their fixed accommodation or no longer own such, for reasons of poverty, or also due to a catastrophic event such as an earthquake, fire, flood or storm. The homelessness can also concern refugees who have had to leave their fixed accommodation for various reasons.

[0008] Tent accommodation is also used by action forces or relief forces, such as by the military, during their multi-day missions in regions, in which no fixed sheltered accommodation is available and where mobility is of utmost importance. Tent accommodation is moreover also applied in the field of rescue missions.

[0009] A disadvantage of tent accommodation lies in the fact that they do not thermally insulate to a sufficient extent, so that the use of tent accommodation as a rule is only possible together with a sleeping bag.

[0010] Sleeping bags for spending the night outdoors and that insulate the body with regard to low outside temperatures are also known, apart from tent accommodation. Such sleeping bags are disclosed, for example, in US 2004/0040087 and U.S. Pat. No. 3,959,834A. However, in contrast to the tent accommodation mentioned above, sleeping bags as a rule do not provide sufficient protection from the influences of the weather, such as wind and downpour.

SUMMARY OF THE INVENTION

[0011] It is an object of the invention to provide a sleeping system of the initially mentioned type, which is simple with regard to its handling, forms a thermally well insulating body receiving space and provides an optimum weather protection from downpour and wind. The body receiving

space should moreover have a certain shape stability, and in particular also be suitable for accommodating personal objects such as clothes.

[0012] The sleeping system according to the invention is characterised in that the sleeping unit, on application, is spanned out (spread out or stretched out) via the support structure in a direct or indirect manner via a tensioning device with at least one tensioning means, so that the sleeping unit forms a body receiving space, which is held in shape by the tensioning device. The body receiving space, in particular, is shape-stable, which is to say retains its shape, on account of this.

[0013] The support structure, in particular, is a support frame.

[0014] The body receiving space, in particular, serves for receiving the legs of a person or parts thereof. The body receiving space can also serve for receiving the legs and the upper body of a person.

[0015] The sleeping system, in particular, includes a tensioning device with several tensioning means, via which the sleeping unit is spanned out.

[0016] The tensioning means, i.e. the at least one tensioning means, in particular are tensioned for this.

[0017] The at least one tensioning means can include an elongate body. The elongate body in particular is designed to accommodate tensile stresses in its longitudinal directions.

[0018] The elongate body can be a cable, a cord (string), a band, a strip, a belt, a strap, a thread, a chain or also a wire.

[0019] The at least one tensioning means can also be present as a cable binder.

[0020] The at least one tensioner or tensioning means can be of plastic, such as polyamide (nylon). The tensioning means can also be of metal, such as aluminium.

[0021] The at least one tensioning means can consist of plastic fibres or natural fibres, or comprise these.

[0022] The at least one tensioning means in particular can be of a textile formation, such as a textile sheet formation. The tensioning means can also form a textile hollow structure.

[0023] The at least one tensioning means or the elongate body can be bendable. The at least one tensioning means or the elongate body in particular can be limp.

[0024] The at least one tensioning means or the elongate body can have elastic characteristics. The tensioning means can thus be of a rubber-elastic material, in particular of a rubber cable, a rubber cord or a rubber band, or comprise such. The tensioning means can also include a helical spring, which can be extended in the direction of the spring axis.

[0025] The tensioning means can, however, also be non-elastic.

[0026] The at least one tensioning means or the elongate body can also be designed in a rigid or semi-rigid manner. The tensioning means can, e.g., be present in the form of a one-part or multi-part, rigid or semi-rigid elongate body such as rod, bar or tube. The tensioning means, for example, can include two or more elongate body parts, such as tubes, which can be telescopically inserted into one another and pulled out of one another.

[0027] The at least one tensioning means can generally be formed of one part or of several parts. The parts of a tensioning means of several parts can be connected to one another by way of a releasable fastener or fastening means, e.g. hook and loop fabric (i.e., Velcro connection (Velcro®)), which is yet described hereinafter. The releasable connec-

tion can also assume the function of a length adjustability, which is yet described hereinafter.

[0028] The at least one tensioning means can include openings, particularly if this has rigid or semi-rigid elongate elements or flexible strips, bands or straps. These openings can be part of a fastening means, which is yet described hereinafter, or of a device for the length-adjustability, which is yet described hereafter.

[0029] The tensioning device includes at least one first fastening means, via which the at least one tensioning means is fastened at a fastening location to the support structure, in particular to the support frame, or to a suspension structure interacting with the support structure, on application.

[0030] The tensioning means can be releasably fastened to the support structure or to a suspension structure interacting with the support structure, via the first fastening means. The first fastening means is accordingly designed for creating a releasable connection.

[0031] The tensioning means can also be non-releasably fastened to the support structure or to suspension structure interacting with the support structure, via the first fastening means.

[0032] The tensioning device moreover includes at least one second fastening means, via which the at least one tensioning means is fastened at a fastening location to the sleeping unit on application.

[0033] The tensioning means can be releasably fastened to the sleeping unit via the second fastening means. Accordingly, the second fastening means is designed for creating a releasable connection.

[0034] The at least one tensioning means can also be non-releasably fastened to the sleeping unit via the second fastening means.

[0035] The at least one tensioning means can form part of the first fastening means. The at least one tensioning means can form part of the second fastening means.

[0036] The at least one tensioning means can also completely form the first fastening means. The at least one tensioning means can also completely form the second fastening means. In other words, the respective fastening means is integrated into the tensioning means.

[0037] The first fastening means can however also be designed as a separate component of one or more parts. The second fastening means can also be designed as a separate component of one or more parts.

[0038] According to an embodiment of the invention, the at least one tensioning means is releasably connected to the sleeping unit via the second fastening means, and non-releasably connected to the support structure or to a suspension structure interacting with the support structure, via the first fastening means.

[0039] According to a further embodiment of the invention, the at least one tensioning means is non-releasably connected to the sleeping unit via the second fastening means and releasably connected to the support structure or to a suspension structure interacting with the support structure, via the first fastening means.

[0040] According to a further embodiment of the invention, the at least one tensioning means is releasably connected to the sleeping unit via the second fastening means and releasably connected to the support structure or to a suspension structure interacting with the support structure, via the first fastening means.

[0041] According to a further embodiment of the invention, the at least one tensioning means is non-releasably connected to the sleeping unit via the second fastening means and non-releasably connected to the support structure or to a suspension structure interacting with the support structure, via the first fastening means.

[0042] The previously described embodiment variants in particular can be combined with a multi-part tensioning means, whose parts are releasably connectable to one another.

[0043] The multi-part tensioning means can accordingly include a length adjustability function. Of course, the multi-part tensioning means described above can also be combined with one of the other mentioned embodiments.

[0044] Fastening elements, which form the fastening means and which are connectable to one another, can be arranged on the tensioning means as well as on the support structure or on a suspension structure interacting with the support structure, in the case that the first fastening means is designed for creating a releasable connection between the at least one tensioning means and the support structure or a suspension structure interacting with the support structure.

[0045] The at least one tensioning means can be fastened to the support structure or to a suspension structure interacting with the support structure, by way of mutual connection of the fastening elements.

[0046] The fastening elements in particular are non-releasably fastened to the support structure or a suspension structure interacting with the support structure. The fastening elements in particular are non-releasably fastened on the tensioning means. The fastening elements, however, can also be releasably fastened to the support structure or to a suspension structure interacting with the support structure. The fastening elements can moreover also be releasably fastened to the tensioning means.

[0047] If the second fastening means is designed for creating a releasable connection between the at least one tensioning means and the sleeping unit, then fastening elements that form the fastening means and are connectable to one another can be arranged on the tensioning means as well as on the sleeping unit. The tensioning means can be fastened to the sleeping unit by way of mutual connection of the fastening elements.

[0048] The fastening elements, in particular, are fastened to the sleeping unit in a non-releasable manner. The fastening elements, in particular, are non-releasably connected to the tensioning means. The fastening elements can, however, also be releasably fastened to the sleeping unit. The fastening elements can also be releasably fastened to the tensioning means.

[0049] A releasable fastening of the tensioning means can be effected via a non-positive and/or positive connection. The releasable connection can be a Velcro connection, a snap connection, a pressing connection, a wedge connection, a clamping connection, a detent connection, a tie-pin connection, a pin connection, an eyelet connection, a hook-in connection (hanging in), a clip connection, a loop connection, a cord connection, a knot connection, a vacuum connection (e.g. by way of suction cup), a magnet connection, a sandwich connection, a zip closure connection, or a screw connection, in particular a sandwich-screw connection which is led through a fabric.

[0050] A sandwich connection is characterised by a first fastening element and second fastening element, which are

connected to one another via a connection element, such as a screw. The connection element can moreover include a fastening part, such as an eyelet, for attaching the tensioning means. The tent skin can be arranged between the first and the second fastening element in a sandwiched manner, wherein the connection element penetrates the tent skin.

[0051] A fastening element of a second fastening means, which is attached to the sleeping unit, can, for example, include a fastening part for a releasable connection to a tensioning means. Such a fastening part can be a clip part, a snap element, a Velcro part, a hook element, a tab, a loop, a magnet, a suction cup, a clamping element or an eyelet.

[0052] The fastening element can moreover include a further fastening part for a releasable connection to the sleeping unit. A clip part, a snap element, a Velcro part, a hook element, a tab, a loop, a magnet, a suction cup, a clamping element or an eyelet can be such a fastening part. The further fastening part, however, can also be non-releasably attached to the sleeping unit.

[0053] The fastening element can be fastened to the sleeping unit, e.g., via a first fastening part such as tab, suction cup, or magnet, and be connected to the tensioning means via a further fastening part such as loop, snap element, Velcro part, eyelet or hook element.

[0054] An eyelet or a loop can be fastened to the sleeping unit in a releasable or non-releasable manner e.g. via a tab. The tensioning means is fastened to the sleeping unit via the eyelet or loop.

[0055] A fastening element of a first fastening means, which is attached to the support structure or to a suspension structure interacting with the support structure, can, e.g., include a fastening part for a releasably connection to a tensioning means. Such a fastening part can be a clip part, a snap element, a Velcro part, a hook element, a tab, a loop, a magnet, a suction cup, a clamping element or an eyelet.

[0056] The fastening element can moreover include a further fastening part for a releasable connection to the support structure or to a suspension structure interacting with the support structure. Such a fastening part can be a clip part, a snap element, a Velcro part, a hook element, a tab, a loop, a magnet, a suction cup, a clamping element or an eyelet. The fastening element can however also be non-releasably attached to the support structure or to a suspension structure interacting with the support structure.

[0057] The fastening element can be fastened to the support structure or to a suspension structure interacting with the support structure, e.g., via a first fastening part such as tab, suction cup or magnet, and connected to the tensioning means via a further fastening part such as a loop, snap element, Velcro part, eyelet or hook element.

[0058] An eyelet or a loop can be releasably or non-releasably fastened to the support structure or to a suspension structure interacting with the support structure, e.g. via a tab. The tensioning means is fastened to the support structure or to a suspension structure interacting with the support structure, via the eyelet or loop.

[0059] A fastening element of a first fastening means, which is attached to the tensioning means and is for creating a releasable connection to the support structure or a suspension structure interacting with the support structure, can, e.g., be a clip part, a snap element, a Velcro part, a hook element, a tab, a loop, a magnet, a suction cup, a clamping element or an eyelet.

[0060] A fastening element of a second fastening means, which is attached to the tensioning means and is for creating a releasable connection to the sleeping unit, can, e.g., be a clip part, a snap element, a Velcro part, a hook element, a tab, a loop, a magnet, a suction cup, a clamping element or an eyelet.

[0061] A non-releasable fastening, as already mentioned further above, can be a sewed connection, a press-fit connection, a rivet connection, a material fit connection, a bonding connection, vulcanisation, or weld connection, e.g. by way of plastic.

[0062] The at least one tensioning means, already mentioned further above, can be adjustable in length. In other words, the tensioning means is adjustable in particular in the pull or tension direction. The tensioning means can be adapted to different distances between the fastening locations on the sleeping unit and the support structure or the suspension structure interacting with the support structure, in this manner.

[0063] The at least one tensioning mean can be infinitely adjustable in length. The tensioning means can be adjustable in length in a stepped manner.

[0064] The longitudinal or length-adjustability, in particular an infinite adjustability, can e.g. be effected by way of Velcro closure, buckle parts, clips, clamping parts or by way of a knot formation or loop formation. The tensioning means can also include elongate elements, which can be telescopically extended and retracted, for this. The elongate elements can be telescopic tubes or telescopic rails.

[0065] The length adjustability, in particular a stepped adjustability, can also be effected by way of hook-in parts, such as adjustment holes and thorn buckle, clip parts or chain links able to be hung in.

[0066] The length adjustability, in particular, is also achieved by a multi-part tensioning means, whose parts are releasably connectable to one another in different positions.

[0067] The length adjustability of the tensioning means has the advantage that the sleeping unit can be optimally spanned out. The adjustability is particularly important if the distance of the covering envelope to the support structure can be different.

[0068] The size of the body receiving space of the sleeping unit can also be adjusted due to the adjustability of the tensioning means. If the sleeping unit, for example, is not completely spanned out, then the body receiving space also does not reach its maximal size. This has the effect that only a smaller spatial volume needs to be heated by the body heat of the user, which is advantageous with lower temperatures. Furthermore, less convection takes place in a restricted body receiving space, and the loading upon the sleeping envelope is reduced.

[0069] According to a special embodiment variant of the invention, the support structure is a support frame, which is led over the sleeping unit transversely to the longitudinal direction.

[0070] The tensioning device in particular forms fastening means in the form of loops, through which the support frame is led.

[0071] The loops can be fastened on the sleeping unit in a direct manner. The loops in particular are attached to an outer envelope of the sleeping unit. The fastening of the loops on the sleeping unit in particular can be non-releasable.

[0072] The loops can also be fastened to the sleeping unit via fastening means, such as eyelets or hooks, which are attached to the sleeping unit.

[0073] The tensioning means can also be formed by the loops themselves. The loops, however, can also be fastened to elongate bodies, as described above, and these form the tensioning means. The elongate bodies in turn are fastened to the sleeping unit.

[0074] The support frame, for example, can include one or more single-part or multi-part frame arches (pole arches or rodding arches), which are led over the sleeping unit transversely to the longitudinal direction of the sleeping unit. Several frame arches can be connected to one another and thus stabilised, via longitudinal struts arranged in the longitudinal direction of the sleeping unit.

[0075] The support frame can be inserted into receivers on the base part of the sleeping unit, and be fixed in this manner.

[0076] According to a particular embodiment variant of the invention, the sleeping system includes a tent with a tent skin, wherein the support structure is part of the tent.

[0077] The support structure, in particular, is a support frame. The support frame can include tent bars or tent rods. The sleeping unit is arranged within the tent.

[0078] The arrangement of the support structure and tent skin and which spans over the sleeping unit in particular forms the tent roof.

[0079] The tent skin corresponds to a suspension structure, which is mentioned above and which interacts with the support structure. The tent skin, in particular, is held or carried by the support structure.

[0080] The tent skin, in particular, is spanned out on the support structure, on application.

[0081] The tent skin on operation can be tensioned atop the support structure. The support structure is accordingly arranged lying at the inside.

[0082] The support structure can also be tensioned or spanned atop the tent skin on operation. The support structure is accordingly arranged lying at the outside.

[0083] The support structure, such as support frame, can moreover also be incorporated into the tent skin. The tent skin can be single-layered or multi-layered. A support structure incorporated into the tent skin in particular is arranged between two layers of the tent skin.

[0084] The tent skin can form the outer skin of the tent. The tent skin can also be the tent skin of an inner tent, over which the tent skin of an outer tent is spanned.

[0085] Accordingly, at least one and in particular several first fastening means are arranged on the tent on operation. The first fastening means can be arranged on the tent skin, on the support structure or on a further suspension structure that interacts with the tent skin or the support structure.

[0086] According to a further development of the invention, at least one fastening element of a first fastening means which is for fastening at least one tensioning means is attached to the tent. In particular, several fastening elements of first fastening means which are for fastening several tensioning means are attached to the tent.

[0087] The tensioning means likewise includes fastening elements belonging to the first fastening means. The tensioning means is/are releasably fastened or can be releasably fastened to the tent via a mutual connection of the fastening elements of the first fastening means. The sleeping unit can be spanned out in the tent in this manner.

[0088] The fastening element or elements of the first fastening means, in particular, are attached to the tent at the side of the tent which faces the tent interior.

[0089] Fastening elements of the first fastening means can be non-releasably attached to the tent or, in the case of a retrofit solution, can be non-releasably attached to the tent when being put into operation for the first time. The fastening element of a first fastening means can be attached to the tent skin for example via a fastening mechanism that penetrates the tent skin. This fastening mechanism can, e.g., be a sandwich-screw connection.

[0090] The at least one fastening element of the first fastening means can be attached to the tent skin of the tent. The at least one fastening element of the first fastening means can be attached to the support structure of the tent. In the case of several fastening elements of several first fastening means, these can be attached to the tent skin as well as to the support structure.

[0091] The first fastening means, for example, as a fastening element can include a clip part, snap element, Velcro part or hook element, which are fastened to the tent, or a tab or loop, which are fastened to the tent, or a magnet or suction cup or an eyelet, which are fastened to the tent.

[0092] The first fastening means as a fastening element can also include magnets or suction cups, which in a paired manner are attached onto a tent skin from the outside and inside, against one another, and are held on the tent skin in a manner actively connected to one another, by way of vacuum or magnet force. The tensioning means can be releasably fastened to the tent skin in this manner.

[0093] The tensioning means can also be fastened to the tent, in particular to the side of the tent that faces the tent interior, via a non-releasable connection.

[0094] If the tensioning means is fastened to the tent via a non-releasable connection, then this tensioning means, however, in particular, can be releasably fastened to the sleeping unit.

[0095] The sleeping system can include at least one, in particular several first fastening means that are arranged on the tent, above the spanned-out sleeping unit, so that the associated tensioning means span out the sleeping unit to the top. The tent can include at least one, in particular, several first fastening means, which are arranged on the tent roof.

[0096] The tent, apart from a tent skin can form a suspension structure, via which the sleeping unit is spanned out on the support structure in an indirect manner.

[0097] The suspension structure can include one or more elongate elements that are fastened in a point-like manner to the tent skin and/or the support structure, on the inner side of the tent. The elongate elements can be connected amongst one another.

[0098] The elongate elements, in particular, can be flexible and, e.g., be designed as threads, cords or cables. The suspension structure, in particular, can include tent tensioning cords.

[0099] The mentioned suspension structure can also be a net or a sheet body, which is spanned out on the inner side of the tent and is fastened to the tent skin and/or to the support frame via fastening means. The sheet body, e.g., is a textile sheet body.

[0100] Such a suspension structure has the advantage that this forms a multitude of fastening locations for a tensioning means, for the purpose of spanning out the sleeping unit.

[0101] At least one, in particular several second fastening means can be arranged on the sleeping unit, via which second fastening means the tensioning means is/are releasably fastened or releasably fastenable to the sleeping unit and thus span out the sleeping unit, in particular in a tent.

[0102] According to a further development of the invention, at least one and, in particular, several fastening elements of one or more second fastening means and for fastening one or more tensioning means are attached to the sleeping unit.

[0103] The tensioning means likewise includes or comprise fastening elements that belong to the second fastening means. The tensioning means is/are releasably fastened or can be releasably fastened to the sleeping unit via a mutual connection of the fastening elements of the second fastening means. The sleeping unit can be spanned out in the tent in this manner.

[0104] The tensioning means can also be non-releasably fastened to the sleeping unit via the second fastening means.

[0105] If the tensioning means is/are fastened to the sleeping unit via a non-releasable connection, then this means or these means in particular are releasably fastenable to the tent.

[0106] As mentioned, the tensioning means can likewise include fastening elements of the first or second fastening means, either for the direct fastening to the tent or to the sleeping unit respectively, or for fastening to a further fastening element of the first and second fastening means respectively, the further fastening element being attached to the tent and to the sleeping unit, respectively.

[0107] The fastening element of the first and second fastening means and which is on the tensioning means, in particular cooperates with a corresponding fastening element of the first and second fastening means respectively, the corresponding fastening element of the first and second fastening means being on the sleeping unit and tent, respectively.

[0108] The fastening elements, in particular, are provided in an end-section or in both end-sections of the elongate body.

[0109] The sleeping system can include at least one, in particular several second fastening means, which on operation are arranged above the body receiving space on the sleeping unit, so that the tensioning means span out the sleeping unit to the top.

[0110] One can envisage the tensioning means including several flexible elongate elements, which are fastened to the tent at several different fastening locations and run together into a common node point. The tensioning means can moreover include an elongate element which, departing from the common node point, is fastened to the sleeping unit at one fastening location. Alternatively, the tensioning means can also include several elongate elements which departing from a common node point are fastened to the sleeping unit at several different fastening locations.

[0111] One can envisage the tensioning means including several elongate elements that are fastened to the sleeping unit at several different fastening locations and that run together into a common node point. The tensioning means can moreover include an elongate element which, departing from the common node point, is fastened to the tent at one fastening location. The tensioning means can alternatively also include several elongate elements which, departing

from the common node point, are fastened to the tent at several different fastening locations.

[0112] The tensioning mean can also include several node points, at which several elongate elements run together in each case.

[0113] The elongate elements, in particular, are flexible. The elongate elements can be cables, cords, bands or threads.

[0114] Tensioning means with a common node point, as described above, have the advantage that not every fastening location on the tent needs to correspond to a fastening location on the sleeping unit, the fastening locations being connected to one another in each case via a separate tensioning means. The tensile forces of a tensioning means can be introduced into the tent or into the sleeping unit at several locations in this manner.

[0115] The base shape of the tent, with which this lies on the ground, can be round, oval, elliptical, circular-segment-shaped, semicircular, polygonal, such as triangular, square, rectangular, pentagonal (5-gonal), n-gonal, or also trapezoidal.

[0116] The tent, in particular, includes a tent floor. Accordingly, the tent floor can have one of the shapes mentioned above. The tent, however, can also be designed without a tent floor.

[0117] The sleeping unit can be fastened to the tent floor and be fixed with respect to this, via fastening mean such as a Velcro connection. A slippage of the sleeping unit with respect to the tent or the tent floor can be prevented in this manner.

[0118] The sleeping unit can be fixed on the ground by way of tent pegs, in the case that the tent is provided without a floor.

[0119] One or several fastening means, via which the connection can be created, can be attached to the sleeping unit (e.g., to the base part) for this.

[0120] One or more fastening means can moreover be attached to the tent floor, e.g., on its side facing the tent interior, for creating the mentioned condition.

[0121] Moreover, it is also possible for the sleeping unit, via tensioning means, to be able to be spanned out on another spanning-out structure or support structure, such as a tent or a support frame, which is specially provided for the sleeping unit.

[0122] The sleeping unit can therefore also generally be spanned out on a framework or mount or on the ceiling of a room. Moreover, it is also possible for the sleeping unit to be spanned out on cords or nets, which, e.g., are fastened on existing structures or ones that are specially provided for this. The cords or nets, e.g., can be attached below a ceiling of a room.

[0123] Moreover, in the outer region, it is also possible for the sleeping unit to be able to be spanned out on already existing structures such as trees, bushes, building structures etc., via tensioning means.

[0124] One can also envisage the tent being designed for receiving or accommodating several sleeping units according to the type described above. This means that several sleeping units can be spanned out in a common tent, by way of a tensioning device in each case. This further development in particular is of interest for applications, in which a sleeping accommodation must be provided for groups of people.

[0125] The invention moreover also relates to a sleeping unit, as described above, for a sleeping system according to the above description. The sleeping unit, in particular, includes an access opening and a body receiving compartment for at least one person.

[0126] The sleeping unit, in particular, includes at least one, in particular several, fastening elements of at least one, of particular of several, second fastening means, via which at least one, in particular several, tensioning means are releasably fastened or can be releasably fastened to the sleeping unit, for the purpose of spanning out the sleeping unit. The tensioning means can also be non-releasably fastened to the sleeping unit via the fastening means or the fastening elements.

[0127] The sleeping unit in particular is designed to be spanned out on a support structure, such as support frame, and, in particular, in a tent, via the tensioning means.

[0128] The sleeping unit in particular includes a base part.

[0129] The base part, in particular, on its lower side includes fastening means for fastening means for fastening the sleeping unit on a tent floor.

[0130] The sleeping unit, in particular, includes an envelope body. This body together with the base part forms a body receiving space. The envelope body, in particular, is not self-supporting, which is to say is not shape-stable. The envelope body, in particular, is of a limp nature.

[0131] The envelope body can be single-walled. The envelope body can be multi-walled.

[0132] The envelope body can include chambers that lie between two outer walls. The chambers can receive an insulation material for insulation purposes. The chambers can also be fillable with compressed air.

[0133] The insulation material can be of down, wool, such as merino wool, or a loose plastic material, such as plastic foam or plastic fibres. A fibre-containing insulation material can also be present as a non-woven, which is to say, fleece.

[0134] The envelope body can include reflection layers, which reduce the outward heat radiation.

[0135] The chambers can be formed by intermediate webs, which connect two layers to one another, such as outer walls, of the envelope body, which are spaced from one another.

[0136] The sleeping unit, in particular, includes an access opening for the access into the body receiving space. The access opening can be closable via a zip closure. The zip closure at the same time can also serve as a control element for the control of the air temperature in the body receiving space.

[0137] The access opening can be arranged in the breast/body region.

[0138] The access opening can, e.g., be arranged laterally and extend, e.g., longitudinally of the sleeping unit.

[0139] The sleeping unit according to a further development of the invention, in particular, includes a closure opening, which is closed by a closure part. The closure part, in particular, is designed in a flexible and sheet-like manner.

[0140] The closure part can be releasably or non-releasably connected to the envelope body. The access opening can be formed by the closure opening, onto which the closure part is attached. The access opening can also be formed by the closure part itself.

[0141] The closure part, in particular, includes a head opening for pushing through the head. The head is accordingly arranged outside the body receiving space.

[0142] The closure part can include an integrated or removable hood or head cover, which connects to the head opening in the closure part. The hood or head cover is connected to the main body of the closure part in particular via a neck section.

[0143] The hood, in particular, forms a facial opening. The head can be stuck into the hood, and the face accordingly stuck through the facial opening in the hood, whilst the body of the user is now arranged in the shape-retaining body receiving space, so that the head with the face is arranged outside the shape-retaining body receiving space.

[0144] The head cover, which is to say hood, in particular bears on the head contour of the user and thus ensures a good thermal insulation of the head and the head opening.

[0145] The closure part, in particular, can be designed in a jacket-like manner, with or without arms.

[0146] The closure part can be of a single-layered or multi-layered material. The closure part, in particular, can be of a textile sheet formation or comprise such.

[0147] The closure part can have elastically stretchable characteristics. The closure part can consist of natural or synthetic rubber or include this. The closure part, in particular, can be of chloroprene rubber, or polychloroprene rubber or chlorobutadiene rubber, also known under the trademark Neoprene®.

[0148] The closure part can be of double-layered or multi-layered, textile material. The closure part can form chambers between two layers. The chamber can contain an isolation material, such as down, wool, merino wool or a loose filling of a plastic material, such as plastic foam or plastic fibres, for insulation purposes. A fibre-containing insulation material can be present as a non-woven, which is to say, fleece. The chambers can also be fillable with compressed air.

[0149] The sleeping unit itself can be impermeable to moisture coming from the outside.

[0150] The sleeping unit with the closure part can be designed in a water-tight and water-vapour-impermeable manner, or in a water-tight and water-vapour-permeable manner.

[0151] The tensioning device, as described above, can include tensioning means for spanning out the closure part. The tensioning means are fastened to the closure part via a fastening location.

[0152] The base part can be an integral part of the sleeping unit. The base part can be a separate part, which can be assembled on the sleeping unit.

[0153] The base part can be designed in a multi-walled manner with hollow chambers that lie therebetween and are fillable with air, for assuming a mattress function. The base part can be actively inflatable with air or is passively inflatable with air, i.e. designed in a self-inflating manner.

[0154] The base part can include a receiving pocket for receiving a multi-walled sleeping mat with hollow chambers that lie therebetween and are fillable with air, for assuming a mattress function. Such a sleeping mat can, e.g., be an insulation mat.

[0155] The base part can moreover include one or more chambers, which are fillable with air, as part of a compensation device, which is variably fillable with air in a manner such that the base part can have locally adjustably different heights even before assuming the position of use, and the ground side of the base part can be adapted at least partly to the inclination and/or unevennesses of the ground by way of

this, so that the lying or sleeping side is more level and/or less inclined with respect to the ground, in the position of use.

[0156] Such a concept is described, for example, in the Swiss application No. 1409/13.

[0157] The sleeping unit can also be a sleeping envelope that forms a body receiving compartment. The sleeping unit and in particular the sleeping envelope, in particular, forms an access opening for at least one person. The sleeping envelope can, e.g., be a sleeping bag, an inlet, or a cocoon.

[0158] The sleeping unit can also be a sleeping cover for covering a person. The sleeping cover, e.g., together with a bed frame and mattress as well as a tensioning device as described above, can form a sleeping system. This sleeping system can also include a support structure as described above.

[0159] The sleeping unit, in particular a sleeping bag, in the foot region can include an integral, i.e. non-releasable terminating (closing) element. The terminating element can also be fastened in the foot region in a completely releasable manner. A circulation of air in the longitudinal direction of the sleeping unit between an access opening or closure opening and the closing element can be produced by way of opening the terminating element.

[0160] If the sleeping unit is arranged in a tent, then the tent in the foot region can include a closable opening, e.g. by way of a zip closure, via which opening the air circulation can be continued to the outside.

[0161] The sleeping unit can moreover include a device for blowing breathing air exhaled by the user, into the body receiving space.

[0162] The body receiving space can be of such a nature that this, apart from receiving the body, also provides space for stowing personal items, such as shoes, clothes, or also food and drink.

[0163] The sleeping unit at the foot side and/or head side can include a net against insects and small animals.

[0164] The sleeping unit in particular can be designed for receiving one person. The sleeping unit can also be designed for accommodating two or more than two persons. A sleeping unit can therefore include several of the closure elements described above.

[0165] The invention also relates to a tent for the sleeping system described above. The tent is characterised by at least one, in particular several, fastening elements of at least one, in particular several, first fastening means for fastening one or more tensioning means for the purpose of spanning out a sleeping unit in the tent. The fastening element or elements, in particular, are arranged at the side of the tent that faces the tent interior. The tensioning means can be releasably fastened to the tent via the fastening element or elements, as already mentioned. The tensioning means can also be non-releasably fastened to the tent via the fastening means or fastening elements.

[0166] The tent skin of the tent, in particular, is water-tight and wind-proof and provides an overriding weather protection for the sleeping unit.

[0167] The tent according to the invention can be a conventional tent, which is retrofitted with the mentioned fastening means. The tent according to the invention can also be designed specifically for a sleeping system according to the invention.

[0168] The tent according to the invention can be designed for receiving and for spanning out a sleeping unit for one or more persons.

[0169] The tent can also be designed for receiving and spanning out several sleeping units for several persons

[0170] A further aspect of the invention relates to an assembly set for spanning out a commercially available sleeping bag in a commercially available tent. The assembly set is accordingly applied with retrofit solutions.

[0171] The assembly set, also called tensioning set, includes a tensioning device with at least one tensioning means for creating a releasable connection between a tent and a sleeping unit, such as a sleeping bag, which is arranged in the tent, for the purpose of spanning out the sleeping unit in the tent.

[0172] According to a further development of the invention, the assembly set moreover includes fastening elements of first fastening means, for attachment onto a tent.

[0173] According to a further development of the invention, the assembly set moreover includes fastening elements of second fastening means for the attachment to a sleeping unit, in particular a sleeping bag.

[0174] The tensioning means according to this embodiment arrangement are designed for fastening to the mentioned fastening elements on the tent or on the sleeping unit.

[0175] The tensioning means can be designed according to the manner described above. The disclosure concerning the tensioning means at the respective place in the present description is explicitly referred to for avoiding repetitions.

[0176] This means that the tensioning means can be designed in a flexurally limp manner. The tensioning means can have elastic characteristics. The tensioning mean can also be designed rigidly or semi-rigidly. The tensioning means can moreover be designed in a single-part or multi-part manner. The tensioning means can be adjustable.

[0177] The tensioning means are attachable to the tent via the fastening means, in particular, in a releasable manner. The tensioning means are attachable to the sleeping unit via the fastening means, in particular, in a releasable manner

[0178] Accordingly, the tensioning means include fastening elements of first fastening means as well fastening elements of second fastening means, and these are connectable to the respective fastening elements of the first and second fastening means, the firsts and second fastening means being on the tent and the sleeping unit respectively.

[0179] The fastening elements can be designed for the releasable attachment or for the one-off, non-releasable attachment to the tent or to the sleeping unit

[0180] The fastening elements for example can be designed according to one of the manners described further above. The disclosure with regard to the fastening elements at the corresponding place in the present description is explicitly referred to for avoiding repetitions.

[0181] The sleeping system according to the invention has the advantage that this is very easy and simple with regard to its handling. The sleeping system moreover requires less stowage space. Despite this, the sleeping system permits the formation of a thermally optimally insulated body receiving space, which moreover is also well protected from down-pour and wind. The body receiving space is also shape-retaining, which is to say shape-stable, in the empty condition thanks to the spanning out.

[0182] The sleeping system according to the invention with or without tent can be applied in outdoor regions and

in indoor regions. The sleeping system is applied outdoors, in particular in the following fields:

alpinism	hunting	rescue
mountain climbing	refugee aid	camping
expeditions	homeless shelter	military
trekking	accommodation for the needy	crisis zones

[0183] The sleeping system is especially suitable as a bivouac system, in particular for individual persons. The associated tent can accordingly be a bivouac tent.

BRIEF DESCRIPTION OF THE DRAWINGS

[0184] The subject-matter of the invention is hereinafter explained in more detail by way of embodiment examples which are represented in the accompanying drawings. There are shown schematically in each case in:

[0185] FIG. 1 a cross-sectional view of a first embodiment of a sleeping system according to the invention;

[0186] FIG. 2 a perspective lateral view of an open sleeping system;

[0187] FIG. 3 a perspective view of a further embodiment of a sleeping system according to the invention;

[0188] FIG. 4 a view of specific embodiments of tensioning means and fastening means;

[0189] FIG. 5 a perspective view of a specific embodiment of a tensioning device.

DETAILED DESCRIPTION OF THE INVENTION

[0190] Basically, in the figures, the same parts are provided with the same reference numerals.

[0191] The sleeping system 1 according to FIG. 1 includes a tent 2, which is only represented in a schematic manner, as well as a sleeping unit 3 arranged in the tent interior 16. The tent 2 includes a support frame 12 of tent poles as well as a tent skin 14, which is tensioned via the support frame 13. The tent skin is of a waterproof and windproof plastic textile. The tent 2 moreover includes a waterproof tent floor 7, which seals the tent interior 16 to the ground. The tent floor 7 is a plastic textile.

[0192] The sleeping unit 3 includes a multi-walled base part 6 with chambers that are fillable with air, so that the base part 6 can assume the function of an air mattress or a sleeping mat. The base part 6 is fixed on the tent floor 7 against slippage by way of a Velcro connection 11.

[0193] The sleeping unit 3 moreover includes an envelope body 4, which is connected to the base part 6 in an integral or releasable manner. The envelope body 4 is designed in a flexible and non-shape-stable manner.

[0194] The envelope body 4 together with the base part 6 forms a body receiving space 12 for receiving a person 18, with a closure opening. The closure opening is closed with a jacket-like, armless closure part 5. The closure part 5 forms an access opening 15 for the access into the body receiving space 12.

[0195] The closure part 5 moreover forms a head opening, through which the head of the person 18 is led to the outside of the body receiving space 12.

[0196] First fastening means 9 are attached at the outside to the sleeping unit 3. Second fastening means 10 are attached at the inside to the tent skin 14. The sleeping unit 3 is spanned out in the tent 2 via tension cords 8. For this,

the tension cords on the one hand are fastened on the sleeping unit 3 via first fastening means 9, and on the other hand on the tent skin 14 via second fastening means 10, and tensioned.

[0197] A shape-retaining, thermally well insulating body receiving space 12 is created by way of this, and this simplifies the access to the user 18 and gives the user 18 a high freedom of movement.

[0198] The sleeping system 1 represented in FIG. 2 basically corresponds to the sleeping system according to FIG. 1, wherein in particular the tent 2 is represented in a more schematic manner in FIG. 1 than in FIG. 2. The closure element 5 moreover includes a hood 19 with an opening for the face. The head can be inserted into the hood 19, and the face accordingly inserted through the facial opening in the hood 19, whilst the body of the user 18 is arranged in the shape-retaining body receiving space. The hood 19 bears on the contour of the head of the user 18 and, thus, thermally insulates the head and the head opening.

[0199] The sleeping system 51, which is represented in FIG. 3, includes a sleeping unit 53 and a support frame 63, 66 for spanning out the sleeping unit 3 via a tensioning device 58, 59, 60, for the purpose of forming a shape-retaining body receiving space. The support frame includes two frame arches (pole arches) 63, which are led transversely to the longitudinal axis L of the sleeping unit 53 over the sleeping unit 53, in a manner distanced to one another. The frame arches 63 are connected to one another via a connection frame (connection pole or rod) 66 running parallel to the longitudinal axis L and are thus stabilised.

[0200] The tensioning device 58, 59, 60 includes tensioning means 58, which are fastened to the envelope body 54 of the sleeping unit 53 via fastening means 60. The tensioning means 58 are moreover looped on the frame arches 63 via fastening loops 59, which form further fastening means. In other words, the frame arches 63 are led through the fastening loops 59, wherein the sleeping unit 53 is spanned out on the support frame 63, 66 via the fastening loops 59.

[0201] The sleeping unit 53 is designed in a multi-layered manner and includes chambers that receive an insulation material, such as down, fleece or a loose plastic material filling (not shown).

[0202] The sleeping unit 53 moreover includes a closure element 55, which forms a hood 69 with a facial opening. The head can be inserted into the hood 69, and the face accordingly inserted through the facial opening in the hood 69, whilst the body of the user is now arranged in the shape-retaining body receiving space.

[0203] The closure part 55 moreover forms an access opening 65 for the user, the access opening being closable via a zip closure.

[0204] The sleeping unit 53 moreover forms a base part 56. The base part 56 includes chambers fillable with compressed air and forms a sleeping mat.

[0205] The frame arches 63 are now supported or anchored to the ground via receivers 64 on the base part 56.

[0206] FIG. 4 shows different embodiment variants of tensioning means 58a, 58b, 58c with length adjustment mechanisms, as can be applied for example with the sleeping system 51 according to FIG. 3. The represented tensioning means 58a, 58b, 58c each includes a band-like (tape-like) or belt-like, flexible elongate body

[0207] The belt-like elongate body of the tensioning means **58a** is provided with a buckle and can be adjusted in length in this manner. The belt-like elongate body is looped around the frame arch **63**.

[0208] The belt-like elongate body of the tensioning means **58b** moreover includes adjustment holes and a fixation element for fixing the longitudinal adjustment via the adjustment holes. The tensioning means **58b** is moreover releasably clipped to the frame arch **63** via a clip element.

[0209] The band-like elongate body of the tensioning means **58c** is looped around the frame arch **63**. A free end-section of the lopped-around elongate body is fixed itself on the elongate body via a Velcro connection, whilst forming a closed loop.

[0210] The tensioning device according to FIG. 5 includes several cord-like, flexible elongate bodies **82a**, **82b**, **82c**, which are attached on the sleeping unit **81** at different fastening locations **85a**, **85b**, **85c**. The elongate bodies **82a**, **82b**, **82c** are grouped together into a common node point **84**. A further cord-like flexible elongate body **83**, which is fastened to the tent (not shown) via a fastening location **86**, leads away from this node point **84**. The tension forces are thus introduced into the sleeping unit **81** at different locations.

1. A sleeping system for residing outdoors or in premises, comprising a support structure and a sleeping unit, which is arranged below the support structure, wherein

the sleeping unit is spanned out via the support structure directly or indirectly via a tensioning device with at least one tensioner, so that the sleeping unit forms a body receiving space that is held in shape by the tensioning device.

2. The sleeping system according to claim 1, wherein the support structure is a support frame.

3. The sleeping system according to claim 1, wherein the sleeping system comprises a tent with a tent skin, and the support structure is part of the tent, where the tent skin on operation is spanned out on the support structure, and the sleeping unit is arranged in the tent.

4. The sleeping system according to claim 1, wherein the tensioning device comprises fasteners and the at least one tensioner is fastened via the fasteners to the sleeping unit as well as to the structure or to a suspension structure interacting with the support structure, wherein the fasteners can be part of the tensioner.

5. The sleeping system according to claim 1, wherein the at least one tensioner is a bendable, limp, elongate body.

6. The sleeping system according to claim 1, wherein the support structure or the suspension structure interacting with the support structure comprises a first fastener, via which the at least one tensioner is fastened to the support structure or to the suspension structure interacting with the support structure, and the sleeping unit comprises a second fastener, via which the at least one tensioner is fastened to the sleeping unit.

7. The sleeping system according to claim 3, wherein the tent comprises at least one fastener, via which the at least one tensioner is fastened to the tent, at a side of the tent facing a tent interior, and thus spans out the sleeping unit, wherein the at least one fastener is arranged above or laterally of the spanned-out sleeping unit, so that the at least one tensioner spans out the sleeping unit to the top.

8. The sleeping system according to claim 1, wherein the at least one tensioner is adjustable in length.

9. A sleeping unit for a sleeping system, the sleeping system comprising a support structure and the sleeping unit, which is arranged below the support structure, wherein

the sleeping unit is spanned out via the support structure directly or indirectly via a tensioning device with at least one tensioner, so that the sleeping unit forms a body receiving space that is held in shape by the tensioning device.

10. The sleeping unit according to claim 9, wherein the sleeping unit comprises a fastener, via which the tensioner can be releasably fastened to the sleeping unit or are non-releasably connected to the sleeping unit, for the purpose of spanning out the sleeping unit.

11. A sleeping unit according to claim 9, wherein the sleeping unit forms an envelope body of a limp nature, said envelope body forming a body receiving compartment.

12. A sleeping unit according to claim 9, wherein the sleeping unit comprises a base part and an envelope body that form a shape-retaining body receiving space, as well as a closure part with a head opening, for the thermal insulation of the body receiving space.

13. The sleeping unit according to claim 12, wherein the a lower side of the base part comprises at least one fastener for fastening and fixation of the sleeping unit to a tent floor or the ground surface.

14. The sleeping unit according to claim 12, wherein the base part, for assuming a mattress function:

is designed in a multi-walled manner with hollow chambers which lie therebetween and which are fillable with air; or

forms a receiving pocket for receiving a multi-walled sleeping mat with hollow chambers which lie therebetween and which are fillable with air.

15. A tent for a sleeping system according to claim 3, wherein the tent at a side facing a tent interior comprises fasteners, via which the tensioner can be releasably fastened or non-releasably connected to the tent, for the purpose of spanning out the sleeping unit in the tent.

16. The tent according to claim 15, further comprising a support structure and a tent skin that is spanned out on the support structure, and the fasteners are attached:

to the tent skin and/or

to the support structure and/or

to a connection structure which is connected to the tent skin and/or to the support structure.

17. The tent according to claim 15, wherein the tent comprises a tent floor, and at least one fastener for the fastening and fixation of the sleeping unit to the tent floor is provided on the tent floor.

18. An assembly set comprising

a tensioner for creating a releasable connection between a tent and a sleeping unit arranged in the tent, for the purpose of spanning out the sleeping unit in the tent.

19. An assembly set according to claim 18, comprising at least one of:

a first fastener for attachment to a tent; and

a second fastener for attachment to a sleeping unit; and wherein

the tensioner designed for the releasable connection to the first and/or second fastener, for the purpose of spanning out the sleeping unit in the tent.

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