A self-inflating camp mat having a fabric outer shell and panels of open cell foam wherein longitudinally spaced fold lines located between foam panels allows the mat to be deflated by folding said mat along said fold lines, expelling the interior air through a valve as the mat is folded.
SELF INFLATING FOLDING CAMP MAT
CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Application No. 61/766,529, filed Feb. 19, 2013, the entire disclosure of which is hereby incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] Camp mats are commonly used in camping and other outdoor activities, as well as indoor activities, to provide added comfort when sleeping in a tent, on the ground or on a floor or other hard surface. Camp mats are easily transportable and relatively inexpensive, especially when compared to a conventional mattress. Foam camp mats are known but do not always provide enough cushioning to the user without adding significant bulk and weight. Similarly, inflatable mats are known but these mats may require expensive and cumbersome pumps to inflate and/or deflate the mat. Self-inflating mats are also known which combine the cushion of a foam mat with the added comfort of an inflatable mat but without the need for a separate air pump. Self-inflating mats, however, are not always easy or quick to deflate when the user wants to pack up the mat in a hurry. What is needed is a self-inflating camp mat which is easily and quickly deflated and stored by users, even children.

SUMMARY OF THE INVENTION

[0003] The following presents a simplified summary of some embodiments of the invention in order to provide a basic understanding of the invention. This summary is not an extensive overview of the invention. It is not intended to identify key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some embodiments of the invention in a simplified form as a prelude to the more detailed description of some embodiments that are presented later.

[0004] In accordance with an embodiment, a self-inflating camp mat is provided that comprises an upper layer, a lower layer secured to the upper layer defining a compartment, at least one panel of open cell foam placed within said compartment, longitudinally spaced fold lines formed by the upper and lower layers and located adjacent each of the panels of open cell foam and a valve in fluid communication with the interior of the compartment allowing air to pass through the valve and into the compartment through open channels when the mat is in a first flat and extended configuration and air to pass through the valve out of the compartment when the mat is in a second folded configuration, the mat being folded along the longitudinally spaced fold lines. Once the mat has been folded completely along the longitudinally spaced fold lines, it may be folded again in half along a perpendicularly-oriented axis. Such a folded mat may be efficiently stored or may be used as a cushion for a bench or seat.

[0006] Other features of the invention will become apparent from the following detailed description when taken in conjunction with the drawings, in which:

FIG. 1 is a side perspective view of a self-inflating camp mat in accordance with an embodiment, in a partially collapsed configuration;

FIG. 2 is a top view of a self-inflating camp mat in accordance with an embodiment, in a fully expanded configuration;

FIG. 3 is a top view of a self-inflating camp mat in accordance with another embodiment, in a fully expanded configuration;

FIG. 4 is a front view of the self-inflating camp mat of either FIG. 2 or 3;

FIG. 5 is a rear view of the self-inflating camp mat of either FIG. 2 or 3;

FIG. 6 is a left side view of the self-inflating camp mat of FIG. 2;

FIG. 7 is a right side view of the self-inflating camp mat of FIG. 2;

FIG. 8 is a left side view of the self-inflating camp mat of FIG. 3;

FIG. 9 is a right side view of the self-inflating camp mat of FIG. 3;

FIG. 10 is a side perspective view of the camp mat of FIG. 1 shown in a fully collapsed configuration;

FIG. 11 is a side perspective view of the camp mat of FIG. 1 shown in a fully collapsed configuration with a user further expelling air from the mat;

FIG. 12 is a section view of the camp mat of FIG. 2 taken along line 1-12 to show the interior thereof;

FIG. 13 is a section view of the camp mat of FIG. 3 taken along line 13-13 to show the interior thereof;

FIG. 14 is a bottom view of the camp mat of FIG. 3 showing the location of lamination;

FIG. 15 is a section view of the camp mat of FIG. 14 taken along line 15-15 showing the interior foam and the location of lamination;

FIG. 16 is a top view of a self-inflating camp mat in accordance with an embodiment, in a fully expanded configuration;

FIG. 17 is a side perspective view of the self-inflating camp mat of FIG. 16, in a partially collapsed configuration;

FIG. 18 is a side perspective view of the self-inflating camp mat of FIG. 16, in a further collapsed configuration;

FIG. 19 is a side perspective view of the self-inflating camp mat of FIG. 16, in a fully collapsed configuration;

FIG. 20 is a top view of a self-inflating camp mat in accordance with an embodiment, in a fully expanded configuration;

FIG. 21 is a side perspective view of the self-inflating camp mat of FIG. 20, in a partially collapsed configuration;

FIG. 22 is a side perspective view of the self-inflating camp mat of FIG. 20, in a further collapsed configuration;
FIG. 23 is a side perspective view of the self-inflating camp mat of FIG. 20, in a fully collapsed configuration.

FIG. 23 is a side perspective view of the self-inflating camp mat of FIG. 20, in a fully collapsed configuration.

DETAILED DESCRIPTION

In the following description, various embodiments of the present invention will be described. For purposes of explanation, specific configurations and details are set forth in order to provide a thorough understanding of the embodiments. However, it will also be apparent to one skilled in the art that the present invention may be practiced without the specific details. Furthermore, well-known features may be omitted or simplified in order not to obscure the embodiment being described.

[0031] Referring now to the drawings, in which like reference numerals represent like parts throughout the several views, FIG. 1 shows a camp mat 10 in accordance with an embodiment. As can be seen in FIGS. 2 and 3, mat 10 comprises sides 12 and ends 14. Sides 12 are preferably of equal length and parallel to each other. Ends 14 are preferably of equal length and parallel to each other. Sides 12 and ends 14 define the support surface 15 of the mat 10 on which a user can lay.

[0032] Mat 10 is comprised of a plurality of panels 21 which run the full width of mat 10. Panels 21 are positioned in spaced apart relation with each other in parallel and are connected at fold lines 24. Fold lines 24 act as hinges between panels 21 which allow the mat 10 to be folded on panel in an accordion fashion as shown in FIGS. 1, 10 and 11. Fold lines 24 are preferably at least as wide as the panel 21 is thick to facilitate the hinge-like action and allow folding of the panels 21 in either direction so that the panels 21 can stack flat on top of each other as shown in FIG. 10. Because of the low pressure in the panels however, the fold line thickness is not mandatory.

[0033] Each panel 21 is comprised of an interior core 16 of polyurethane open cell foam such that air can pass through the foam. The interior core 16 is preferably between ¼ and ½ inches in thickness, although thinner or thicker foam may be utilized. The panels 21 are preferably generally rectangular in shape although other shapes such as oblong and the like are also within the scope of the present invention.

[0034] The interior cores 16 are surrounded by envelope 18 formed of top shell 18a and bottom shell 18b. Envelope 18 is preferably made of polyester taffeta as is standard in the industry for durability, ease of cleaning, ease of manufacture and comfort. Of course, other materials known in the industry such as polyester and the like would also be within the scope of the present invention.

[0035] The entire envelope 18 is sealed all the way around the perimeter 20. The perimeter 20 is preferably pinch welded as shown in FIGS. 4 and 5 on sides 12 and ends 14 to secure edges of envelope 18 to each other around the panels 21 and core 16. Other methods of sealing the envelope 18 known in the industry are also within the scope of the present invention.

[0036] In a first embodiment depicted in FIGS. 2, 6, 7 and 12, the top shell 18a and bottom shell 18b form a compartment which surrounds each panel core 16. The top and bottom shells 18a, 18b are sealed to each other along the fold lines 24 between the panels 21 and around the perimeter 20 of the mat 10. Fold lines 24 may be formed on the bottom sheet 18c as shown in FIGS. 6 and 7 or may be formed more towards the center of the height of the panels (not shown) or on the top sheet 18a (not shown). The shells are preferably welded to each other as is known in the industry. Each panel core 16 is free floating within each respective compartment.

[0037] As depicted in FIGS. 2 and 12, the shells are not sealed to each other the entire width of the mat 10—there is an open area towards the edges which creates open run channels 26 along the sides of the mat 10 and facilitates air flow. In this first embodiment, mat 10 comprises at least one open run channel 26. Preferably, mat 10 comprises one open run channel 26 at each side 12 but it is within the scope of the present invention to have fewer or more than two channels 26. It is also within the scope of the present invention for the at least one channel 26 to be located down the center of the mat 10 or at any other lengthwise location along the mat 10. The top and bottom shells 18a and 18b are not sealed to each other along the channel 26 to allow more air to pass between the panels 21 for self-inflation and deflation when pressure is applied to the panels. At least one channel 26 has a valve 22 in fluid communication with the atmosphere outside of the mat.

[0038] In another embodiment, shown in FIGS. 3, 8, 9, and 13-15, the panel cores 16 are laminated to the top shell 18a and the bottom shell 18b. In this embodiment, the shell is sealed to itself only around the perimeter 20 of the mat 10. Air passes through the foam without the use of outer run channels. In this embodiment, the panel cores 16 are not free floating, but are fixed in place. The dashed lines in FIGS. 3 and 14 depict where the foam is laminated 30 to the shell and where the shell is sealed together. As can be seen in FIG. 15, although the top shell and bottom shell are laminated to the foam, there is a small area towards the edge of the mat where there is no laminating by virtue of manufacturing capabilities. While not a true outer run channel, this non-laminated area 26 does function in a similar manner. The fold lines 24 of the second embodiment comprise open channels as shown in FIG. 1c.

[0039] Mat 10 comprises at least one valve 22. The preferred valve is a free flow valve which is known in the industry and is a standard self-inflating valve. The valve 22 butts up against the foam core 16 and is preferably welded to shell 18a or 18b.

[0040] To inflate the mat 10, the mat is laid flat in a fully open configuration and the valve 22 is unscrewed or otherwise manipulated to open the valve and allow air to automatically flow into the mat 10—standard operation for a self inflating valve. Air passes through the open run channels 26 and foam core 16 in a first embodiment and through the foam core 16 in a second embodiment to inflate the mat 10. The open cell foam absorbs air and allows it to pass through the foam. Once the desired firmness is reached, the valve is shut to maintain the firmness. The mat 10 fills up by the expansion of the foam drawing air in and not by inflation of an air impermeable bladder.

[0041] To deflate mat 10, the valve 22 is first unscrewed to open the self-inflating valve. The mat is then folded in an accordion fashion starting from the end 12 opposite the valve 22. The mat 10 is folded along the fold lines 24 in alternate directions as shown in FIGS. 1 and 10. The low pressure in the mat allows the mat to easily fold. As mat is folded, air is pushed through open cell foam and expelled through valve 22. As shown in FIG. 11, once the mat 10 is folded, the user can sit on top of the mat to further expel air and reduce the storage size of the mat even further.

[0042] Once the mat 10 is folded, a securing mechanism 28 is used to retain the mat 10 in its collapsed and folded configuration for transportation and storage. As shown in the
figures, elastic bands are a preferred storage mechanism. Other mechanisms known and used in the industry, however, such as straps and buckles, toggles, tie cords and the like are also within the scope of the present invention. The securing mechanism is preferably attached to the end 12 where the valve 22 is located. It is also within the scope of the present invention for the securing mechanism to be separate from the mat and to be placed around the mat 10 after it has been folded.

[0043] As shown in FIGS. 16-19, camp mat 10 may include additional fold line 32 running the laterally along length of camp mat 10 down the approximate center of the mat. When fold line 32 is present, panel 21 may extend only half the width of camp mat 10 with lateral fold line 32 abutting two separate panels (FIGS. 16 and 17). Fold line 32 allows the camp mat 10 to be folded into a third configuration. The first configuration comprises the fully extended mat (FIG. 16). The second configuration comprises the collapsed mat folded along longitudinal fold lines 24 in an accordion fashion (shown in motion in FIGS. 17 and 18). The third configuration comprises the camp mat 10 folded again in half along lateral fold line 32 so that the fully collapsed and folded camp mat 10 comprises a small footprint for storage or for use as a cushion on a bench or seat (FIG. 19).

[0044] Camp mat 10 may also comprise an alternative folding configuration (FIGS. 20-23) wherein the camp mat 10 is first folded laterally along its length along fold line 32 to form the second configuration. In this alternate second configuration, camp mat 10 can be used as a cushion for a bench seat. The third configuration then comprises folding camp mat 10 along the longitudinal fold lines 24 in an accordion fashion. When using this alternative folding configuration, camp mat 10 may also comprise securing mechanisms 36 such as loops and toggles, snaps, tie strings and the like which are located on the exterior lateral edges 25, 27 of camp mat 10 and function to secure the edges to each other for use as a bench seat cushion or to assist in maintaining straight fold lines.

[0045] Camp mat 10 may have additional features, many of which may be common to camp mats. For example, camp mat 10 may include decoration, storage pockets, a bag or case, key fobs, or any number of additional features. Camp mat 10 may also comprise additional valves for assisting in the expulsion of air when being folded or for increasing the rate of inflation when the mat is unfolded. As shown in FIG. 20, it is preferred to include one additional valve 34 on the opposite end from the first valve 22, the second valve also being connected to channel 26 and in fluid communication with the atmosphere outside of the mat.

[0046] Other variations are within the spirit of the present invention. Thus, while the invention is susceptible to various modifications and alternative constructions, a certain illustrated embodiment thereof is shown in the drawings and has been described above in detail. It should be understood, however, that there is no intention to limit the invention to the specific form or forms disclosed, but on the contrary, the intention is to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention, as defined in the appended claims.

[0047] All references, including publications, patent applications, and patents, cited herein are hereby incorporated by reference to the same extent as if each reference were individually and specifically indicated to be incorporated by reference and were set forth in its entirety herein.

[0048] The use of the terms “a” and “an” and “the” and similar referents in the context of describing the invention (especially in the context of the following claims) are to be construed to cover both the singular and the plural, unless otherwise indicated herein or clearly contradicted by context. The terms “comprising,” “including,” “containing,” and “comprising” are to be construed as open-ended terms (i.e., meaning “including, but not limited to,”) unless otherwise noted. The term “connected” is to be construed as partly or wholly contained within, attached to, or joined together, even if there is something intervening. Recitation of ranges of values herein are merely intended to serve as a shorthand method of referring individually to each separate value falling within the range, unless otherwise indicated herein, and each separate value is incorporated into the specification as if it were individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g., “such as”) provided herein, is intended merely to better illuminate embodiments of the invention and does not pose a limitation on the scope of the invention unless otherwise claimed. No language in the specification should be construed as indicating any non-claimed element as essential to the practice of the invention.

[0049] Preferred embodiments of this invention are described herein, including the best mode known to the inventors for carrying out the invention. Variations of those preferred embodiments may become apparent to those of ordinary skill in the art upon reading the foregoing description. The inventors expect skilled artisans to employ such variations as appropriate, and the inventors intend for the invention to be practiced otherwise than as specifically described herein. Accordingly, this invention includes all modifications and equivalents of the subject matter recited in the claims appended hereto as permitted by applicable law. Moreover, any combination of the above-described elements in all possible variations thereof is encompassed by the invention unless otherwise indicated herein or otherwise clearly contradicted by context.

What is claimed is:

1. A self-inflating camp mat, comprising:
   An upper layer;
   A lower layer secured to said upper layer and defining a compartment;
   At least one panel of open cell foam placed within said compartment;
   Longitudinally spaced fold lines formed by said upper layer and said lower layer and located adjacent each of said at least one panel of open cell foam;
   A valve in fluid communication with the interior of said compartment;
   Wherein air passes through said valve into the compartment when the mat is in a first configuration and air passes through said valve out of the compartment when the mat is in a second configuration.

2. The self-inflating camp mat of claim 1, wherein the first configuration is a flat, extended configuration and the second configuration is a folded configuration wherein said mat is folded along said longitudinally spaced fold lines.

3. The self-inflating camp mat of claim 2 further comprising at least one open channel running the length of the mat and across said panels of open cell foam.
4. The self-inflating camp mat of claim 2 wherein said upper layer and said lower layer are secured to said open cell foam.

5. The self-inflating camp mat of claim 3 or claim 4 wherein the mat is folded in an accordion-style fashion in said second configuration.

6. The self-inflating camp mat of claim 5 further comprising a securing mechanism for retaining the mat in the second configuration.

7. The self-inflating camp mat of claim 2 further comprising at least one lateral fold line and comprising a third configuration wherein said mat is folded along said at least one lateral fold line.

8. The self-inflating camp mat of claim 1 further comprising at least one lateral fold line and wherein the first configuration is a flat, extended configuration, the second configuration is a folded configuration wherein said mat is folded along said lateral fold line and further comprising a third configuration wherein said mat is folded along said longitudinally spaced fold lines.

9. The self-inflating camp mat of claim 8 further comprising securing mechanisms for securing the exterior lateral edges of said mat to each other while in the second configuration.

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