A sleeping bag with an integrated air mattress includes outer and inner shells, an inflatable tube grid, insulation, and means for selectively inflating the tube grid. Both the outer and inner shells have inner and outer surfaces, and each defines an opening. The inner shell’s outer surfaces are positioned adjacent the outer shell’s inner surfaces, and the inner shell’s opening is aligned adjacent the outer shell’s opening. The tube grid defines a plurality of grid cavities and is sandwiched between the outer and inner shells. Insulation is positioned in the grid cavities and sandwiched between the outer and inner shells. When the tube grid is inflated, the user may enter the sleeping bag through the inner shell’s opening. To pack the sleeping bag, the tube grid is deflated, causing the tube grid and insulation to shift from an expanded to a compressed configuration, taking up a minimal amount of space.
SLEEPING BAG WITH INTEGRATED AIR MATTRESS

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to a sleeping bag. In particular, the present invention relates to a sleeping bag with an integrated air mattress.

[0002] Camping and hiking are currently enjoying a surge in popularity. However, people now have enhanced expectations of comfort and convenience while camping, and a large demand exists for products providing this comfort and convenience. Further, there are many different ways in which people like to camp. Some carry their equipment to remote places and require light and easily packed equipment, while others camp alongside their vehicles and primarily require comfort. While a tradeoff between ultra-comfort and ultra-light construction has previously seemed inevitable in sleeping bag design, the current invention provides more comfort in a lightweight sleeping bag.

[0003] Two primary considerations for comfort are the sleeping bag’s ability to retain heat and the sleeping bag’s ability to firmly support the user, even though the sleeping bag may be placed on uneven ground. While air mattresses have been found to support the user well, regardless of imperfections in the ground, the large air pockets currently used allow convective currents to form, robbing heat from the mattress. Foam, goose down, synthetic fibers, and other insulation are merely a means to hold small pockets of air. If an air mattress can be made with small pockets of air instead of large pockets, convective currents will not be able to form and the air mattress will retain more heat.

[0004] Various proposals for sleeping bags that incorporate air mattresses are found in the art. U.S. Pat. No. 3,887,092 discloses a self-inflatable air mattress and sleeping bag that traps air inside an airtight jacket filled with foam. Means are included to manually increase the air pressure inside the foam-filled jacket.

[0005] Many sleeping bag devices have been suggested that use a plurality of parallel and longitudinally extended elongate air compartments along with various improvements over the prior art. Such devices may be found in U.S. Pat. No. 4,996,733, U.S. Pat. No. 5,528,779, U.S. Pat. No. 5,553,339, U.S. Pat. No. 5,740,565, and U.S. Pat. No. 5,974,608.

[0006] U.S. Pat. No. 5,640,725 discloses a sleeping bag with removable components, including an air mattress.

[0007] U.S. Pat. No. 6,321,400 discloses an air mattress sleeping bag that includes a self-contained powered air inflation device. The air mattress sleeping bag is capable of converting to a full air mattress when not in use as a sleeping bag.

[0008] While assumably effective for their intended purposes, none of the above proposals provide an air mattress that can effectively retain heat by reducing large air pockets, provides a comfortable place to sleep, is lightweight and not bulky, and can be easily packed. Instead, the above proposals use air mattresses with large air pockets or completely filled with foam.

[0009] Therefore, it is desirable to have a sleeping bag with an air mattress that effectively retains heat, is comfortable, is lightweight and compact, can be easily packed, is convenient to use, and does not require an excessive volume of air.

SUMMARY OF THE INVENTION

[0010] A sleeping bag with an integrated air mattress according to the present invention includes an outer shell, an inner shell, an inflatable tube grid, insulation, and means for selectively imparting a stream of air to the inflatable tube grid (air input means). The outer shell has inner and outer surfaces and defines an opening, and the inner shell has inner and outer surfaces and defines an opening. The outer surfaces of the inner shell are positioned adjacent the inner surfaces of the outer shell, and the opening defined by the inner shell is aligned adjacent the opening defined by the outer shell. The inflatable tube grid defines a plurality of grid cavities and is sandwiched between the outer and inner shells. Insulation is positioned in the grid cavities. Additional insulation may be sandwiched between the outer and inner shells.

[0011] In use, the sleeping bag with integrated air mattress is placed where its user wants to sleep, and the air input means are used to impart a stream of air to the inflatable tube grid, thus inflating the inflatable tube grid. When the inflatable tube grid is inflated, the insulation positioned in the grid cavities is stretched to an expanded configuration. The user may then enter the sleeping bag with integrated air mattress through the opening defined by the inner shell. When the user is ready to pack up the sleeping bag with integrated air mattress, the inflatable tube grid is deflated, causing the inflatable tube grid and the insulation positioned in the grid cavities to shift to a compressed configuration. The sleeping bag with integrated air mattress may then be easily packed, taking up a minimal amount of space.

[0012] Therefore, a general object of this invention is to provide a sleeping bag with an integrated air mattress that effectively retains heat.

[0013] Another object of this invention is to provide a sleeping bag with an integrated air mattress, as aforesaid, that is comfortable to use.

[0014] Still another object of this invention is to provide a sleeping bag with an integrated air mattress, as aforesaid, that is lightweight and compact.

[0015] Yet another object of this invention is to provide a sleeping bag with an integrated air mattress, as aforesaid, that can be easily packed for transport or storage.

[0016] A further object of this invention is to provide a sleeping bag with an integrated air mattress, as aforesaid, that is convenient to use.

[0017] A still further object of this invention is to provide a sleeping bag with an integrated air mattress, as aforesaid, that does not require an excessive volume of air.

[0018] Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, wherein is set forth by way of illustration and example, embodiments of this invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. 1 is a perspective cut-away view of a sleeping bag with an integrated air mattress according to the present invention with a hand pump;
FIG. 2a is a top view of the sleeping bag with an integrated air mattress as in FIG. 1;

FIG. 2b is a sectional view of the sleeping bag with an integrated air mattress taken along line 2b-2b of FIG. 2a;

FIG. 2c is a sectional view of the sleeping bag with an integrated air mattress taken along line 2c-2c FIG. 2a;

FIG. 3a is a sectional view on an enlarged scale of the inflatable tube grid and insulation taken from FIG. 2c in an expanded configuration;

FIG. 3b is a sectional view on an enlarged scale of the inflatable tube grid and insulation as in FIG. 3a in a deflated configuration;

FIG. 4a is a perspective view of the sleeping bag with an integrated air mattress as in FIG. 1 with a compressor; and

FIG. 4b is a perspective view of the sleeping bag with an integrated air mattress as in FIG. 1 with a foot pump.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A sleeping bag with an integrated air mattress according to the present invention will now be described in detail with reference to FIGS. 1 through 4b of the accompanying drawings. More particularly, a sleeping bag with an integrated air mattress includes an outer shell, an inner shell, an inflatable tube grid, and insulation. The insulation is positioned in the grid cavities of the inflatable tube grid. The insulation is more effective than the material directly underneath the user. When the sleeping bag is inflated, the material loses much of its insulative value. With the current sleeping bag, all of the user's weight is carried by the inflatable tube grid. The insulation is not compressed, it is highly effective.

Insulation is sandwiched between the inner surface of the outer shell bottom portion and the outer surface of the inner shell bottom portion (FIG. 2c). Insulation is also sandwiched between the inner surface of the outer shell top portion and the outer surface of the inner shell top portion (FIG. 2c).

Means are also provided for selectively releasing air from the inflatable tube grid for deflating the inflatable tube grid. A simple air release valve may be used, or the air input means may also function as a vacuum, drawing the air out of the inflatable tube grid.

In use, the sleeping bag with integrated air mattress is placed where the user wants to sleep, and the air input means are used to impart a stream of air to the inflatable tube grid, thus inflating the inflatable tube grid. When the inflatable tube grid is inflated, the insulation is mounted to a expanded configuration (FIG. 3a). The user may then enter the sleeping bag with integrated air mattress through the opening defined by the inner surface. The inflatable tube grid is deflated as described above, causing the inflatable tube grid to shift to a compressed configuration (FIG. 3b). The sleeping bag with integrated air mattress may then be easily packed, taking up a minimal amount of space.

A sleeping bag with an integrated air mattress according to another embodiment of the present invention includes a construction substantially similar to the construction previously described except as specifically noted below. More particularly, the sleeping bag with an integrated air mattress according to this embodiment includes a zipper for selectively attaching the top portions of the outer and inner shells with the bottom portions of the outer and inner shells.

It is understood that while certain forms of this invention have been illustrated and described, it is not
limited thereto except insofar as such limitations are included in the following claims and allowable functional equivalents thereof.

Thus having thus described the invention, what is claimed is new and desired to be secured by Letters Patent as follows:

1. A sleeping bag with an integrated air mattress, comprising:
   an outer shell having top and bottom portions and opposed first and second ends with said first end defining an opening, said top and bottom portions each having respective inner and outer surfaces;
   an inner sheet situated in said outer shell adjacent said inner surface of said outer shell bottom portion;
   an inflatable tube grid sandwiched between said inner surface of said outer shell bottom portion and said inner sheet, said inflatable tube grid defining a plurality of grid cavities; and
   means for selectively imparting a stream of air to said inflatable tube grid for inflating said inflatable tube grid.

2. The sleeping bag as in claim 1 further comprising insulation positioned in said respective grid cavities.

3. The sleeping bag as in claim 2 further comprising bottom insulation sandwiched between said inner surface of said outer shell bottom portion and said inner sheet.

4. The sleeping bag as in claim 1 further comprising insulation sandwiched between said inner surface of said outer shell bottom portion and said inner sheet.

5. The sleeping bag as in claim 1 wherein said means for selectively imparting a stream of air to said inflatable tube grid for inflating said inflatable tube grid is a hand pump operatively connected to said inflatable tube grid.

6. The sleeping bag as in claim 1 wherein said means for selectively imparting a stream of air to said inflatable tube grid for inflating said inflatable tube grid is a foot pump operatively connected to said inflatable tube grid.

7. The sleeping bag as in claim 1 wherein said means for selectively imparting a stream of air to said inflatable tube grid for inflating said inflatable tube grid is a compressor operatively connected to said inflatable tube grid.

8. The sleeping bag as in claim 1 further comprising means for selectively releasing air from said inflatable tube grid for deflating said inflatable tube grid.

9. A sleeping bag with an integrated air mattress, comprising:
   an outer shell having opposed top and bottom portions and opposed first and second ends with said first end of said outer shell defining an opening, said top and bottom portions of said outer shell each having respective inner and outer surfaces;
   an inner shell having opposed top and bottom portions and opposed first and second ends with said first end of said inner shell defining an opening, said top and bottom portions of said inner shell each having respective inner and outer surfaces, said outer surfaces of said top and bottom portions of said inner shell being positioned adjacent said inner surfaces of said top and bottom portions of said outer shell, said opening defined by said inner shell registering with said opening defined by said outer shell;
   an inflatable tube grid sandwiched between said inner surface of said outer shell bottom portion and said outer surface of said inner shell bottom portion, said inflatable tube grid defining a plurality of grid cavities; and
   means for selectively imparting a stream of air to said inflatable tube grid for inflating said inflatable tube grid.

10. The sleeping bag as in claim 9 further comprising insulation positioned in said respective grid cavities.

11. The sleeping bag as in claim 10 further comprising bottom insulation sandwiched between said inner surface of said outer shell bottom portion and said outer surface of said inner shell bottom portion.

12. The sleeping bag as in claim 11 further comprising top insulation sandwiched between said inner surface of said outer shell top portion and said outer surface of said inner shell top portion.

13. The sleeping bag as in claim 9 further comprising insulation sandwiched between said inner surface of said outer shell bottom portion and said outer surface of said inner shell bottom portion.

14. The sleeping bag as in claim 9 further comprising insulation sandwiched between said inner surface of said outer shell top portion and said outer surface of said inner shell top portion.

15. The sleeping bag as in claim 9 wherein said means for selectively imparting a stream of air to said inflatable tube grid for inflating said inflatable tube grid is a hand pump operatively connected to said inflatable tube grid.

16. The sleeping bag as in claim 9 wherein said means for selectively imparting a stream of air to said inflatable tube grid for inflating said inflatable tube grid is a foot pump operatively connected to said inflatable tube grid.

17. The sleeping bag as in claim 9 wherein said means for selectively imparting a stream of air to said inflatable tube grid for inflating said inflatable tube grid is a compressor operatively connected to said inflatable tube grid.

18. The sleeping bag as in claim 9 further comprising an air escape valve for selectively releasing air from said inflatable tube grid for deflating said inflatable tube grid.

19. An air mattress comprising:
   an outer shell having top and bottom portions; and
   an inflatable tube grid sandwiched between said outer shell top and bottom portions, said inflatable tube grid defining a plurality of grid cavities.

20. The air mattress as in claim 19 further comprising insulation positioned in said respective grid cavities.

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