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(54) SLEEPING DEVICE

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(52) **U.S. Cl.** ..... **5/413 R**; 5/706; 5/482

(57) **ABSTRACT**

An inflatable mattress is provided that has a method of retaining a sleeping bag on top of it. Retaining a sleeping bag on top is achieved by using a coverlet. The coverlet is connected to the top of the inflatable mattress by suitable fasteners. The pocket formed between the coverlet and mattress portion is where a sleeping bag is inserted. An air fill mechanism is provided that is easily accessible from the outside of the mattress. An integral protective flap is also provided. The flap encases the mattress when in a rolled-up configuration and protects it during storage and transport. The device operates as one self-contained unit.

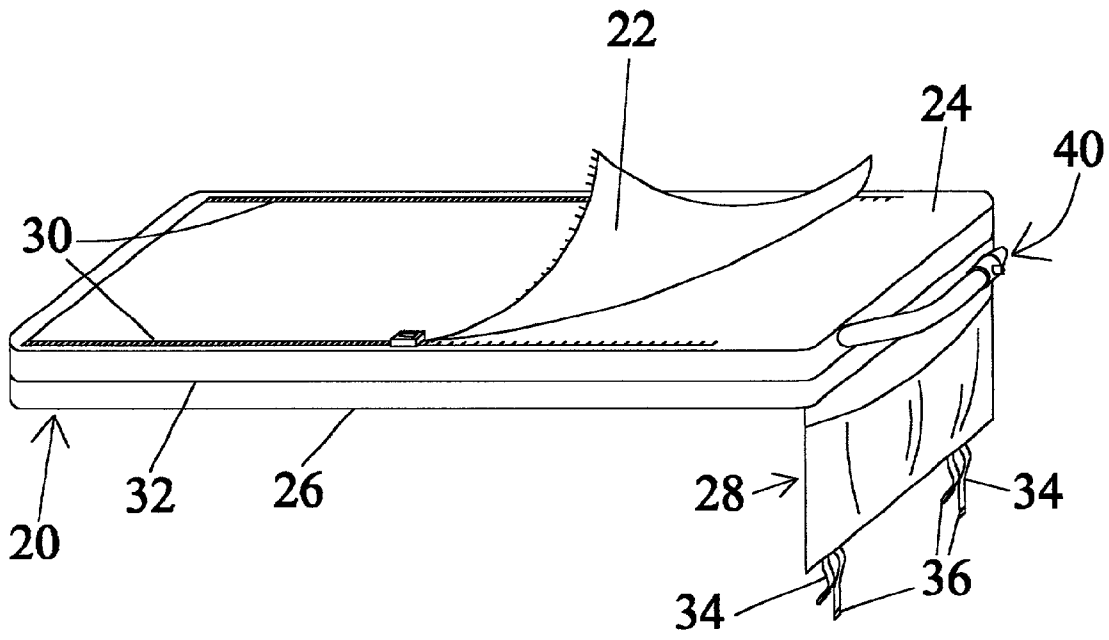


FIG. 1

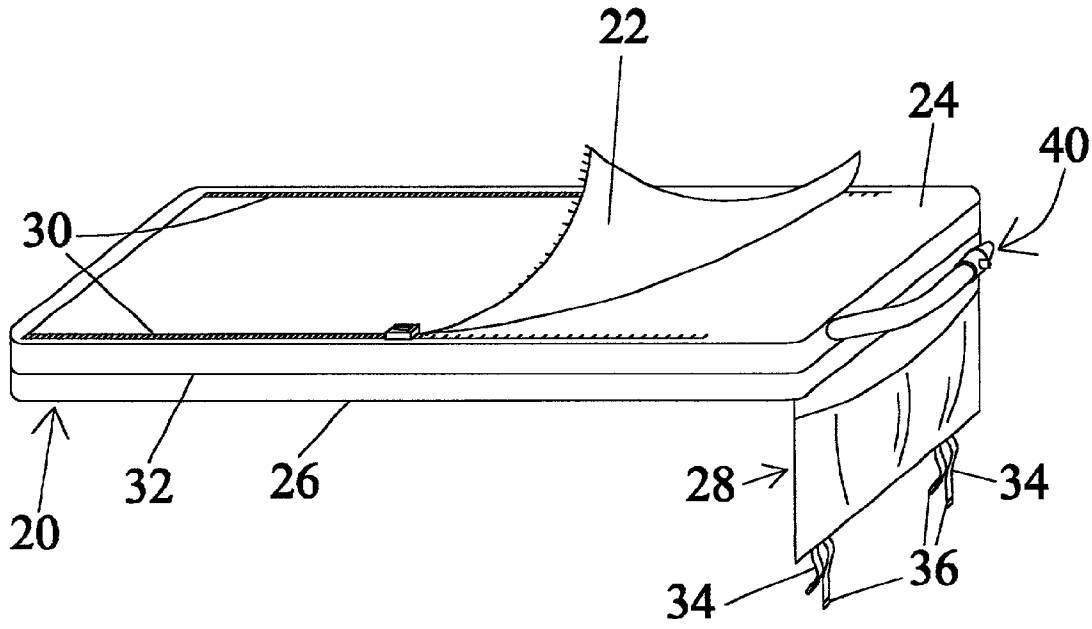


FIG. 1A

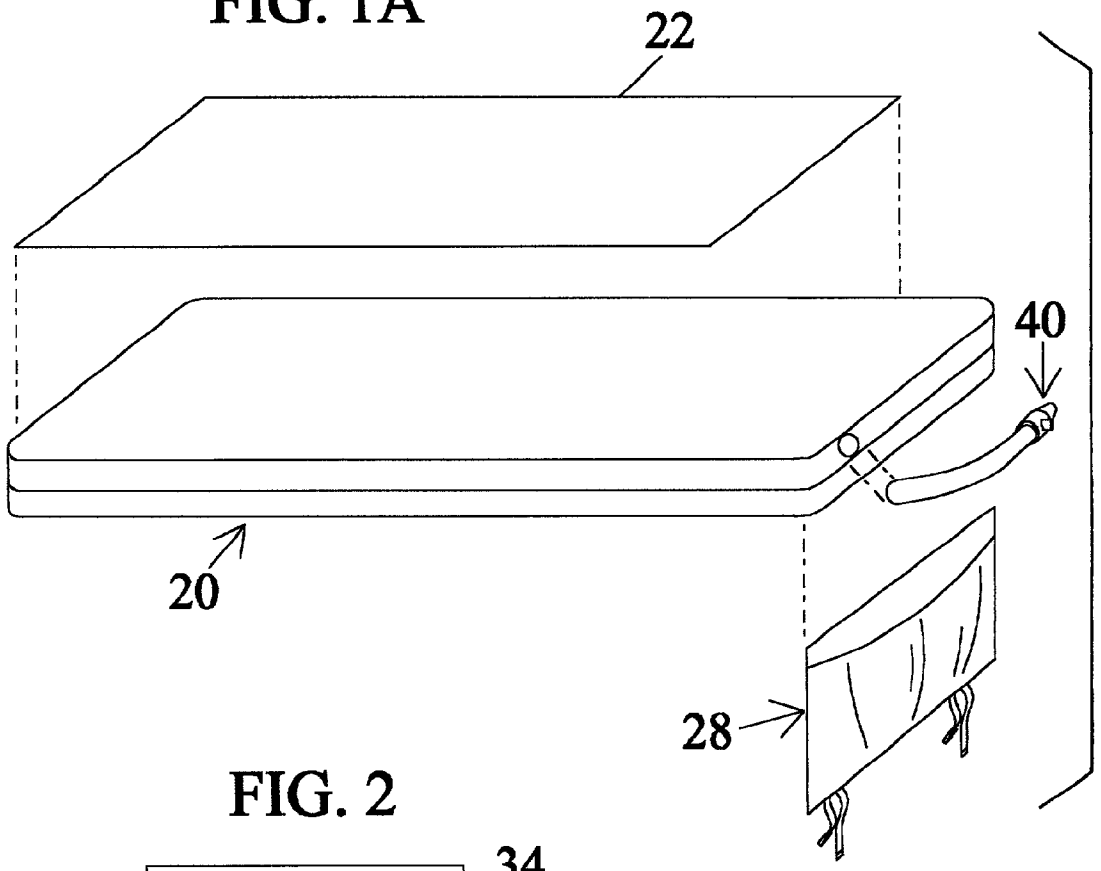


FIG. 2

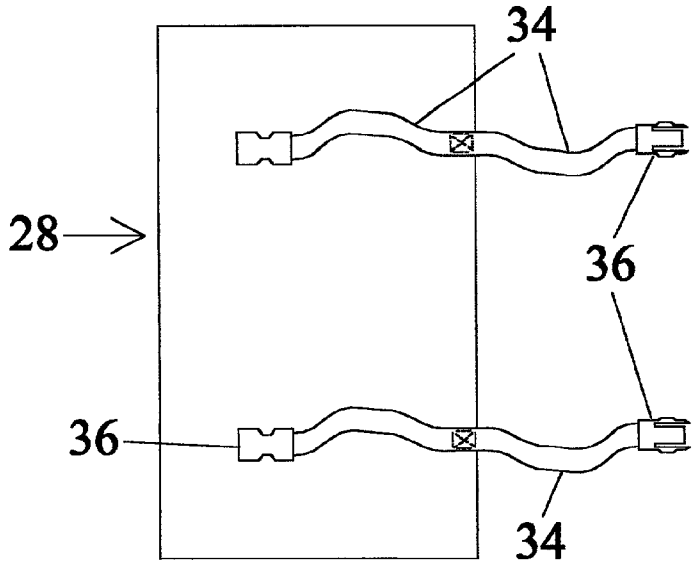


FIG. 3

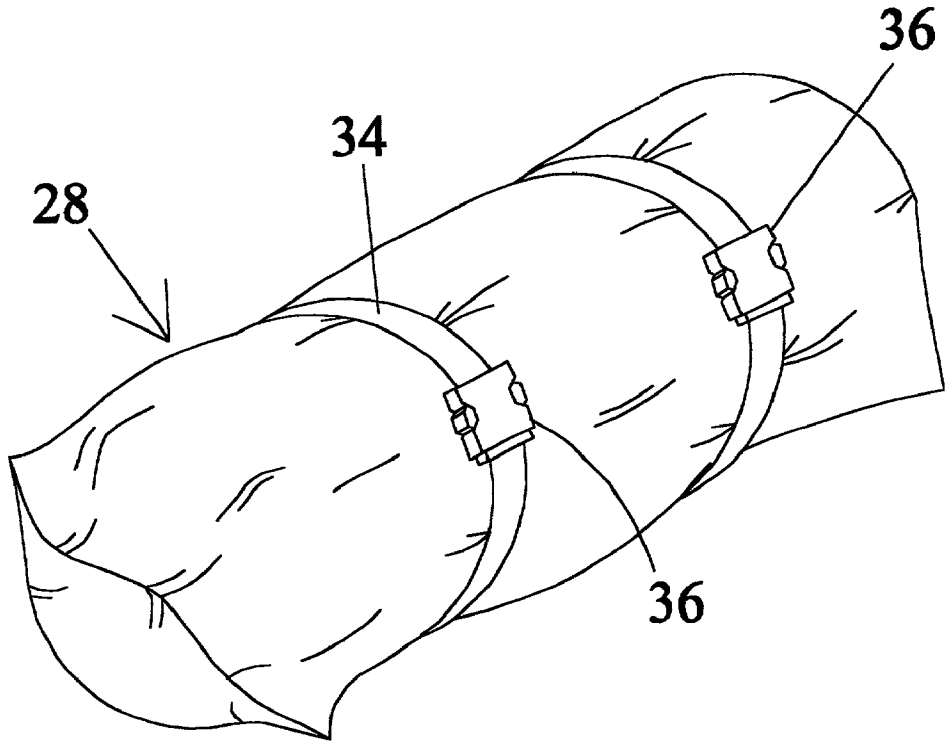


FIG. 4

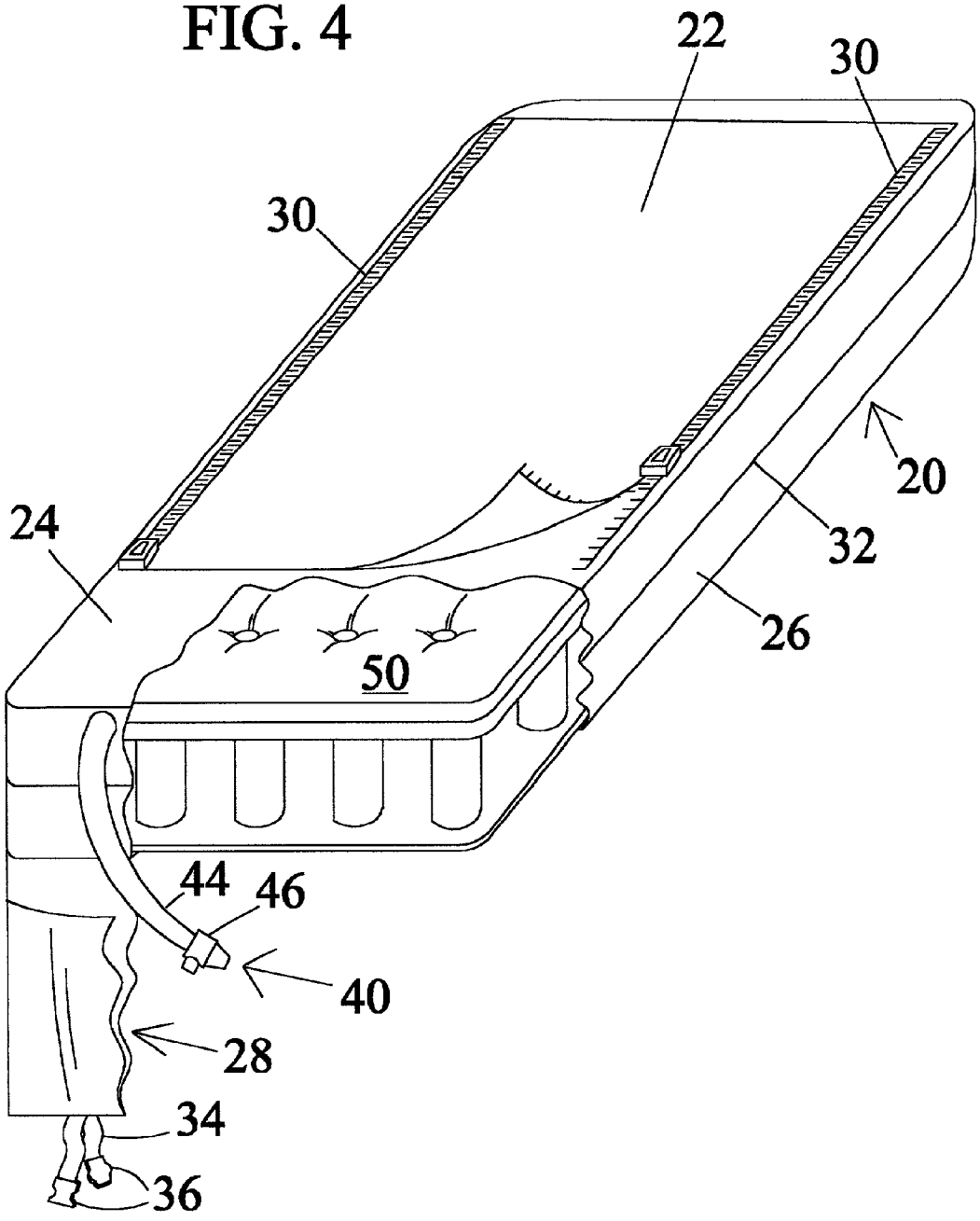


FIG. 5

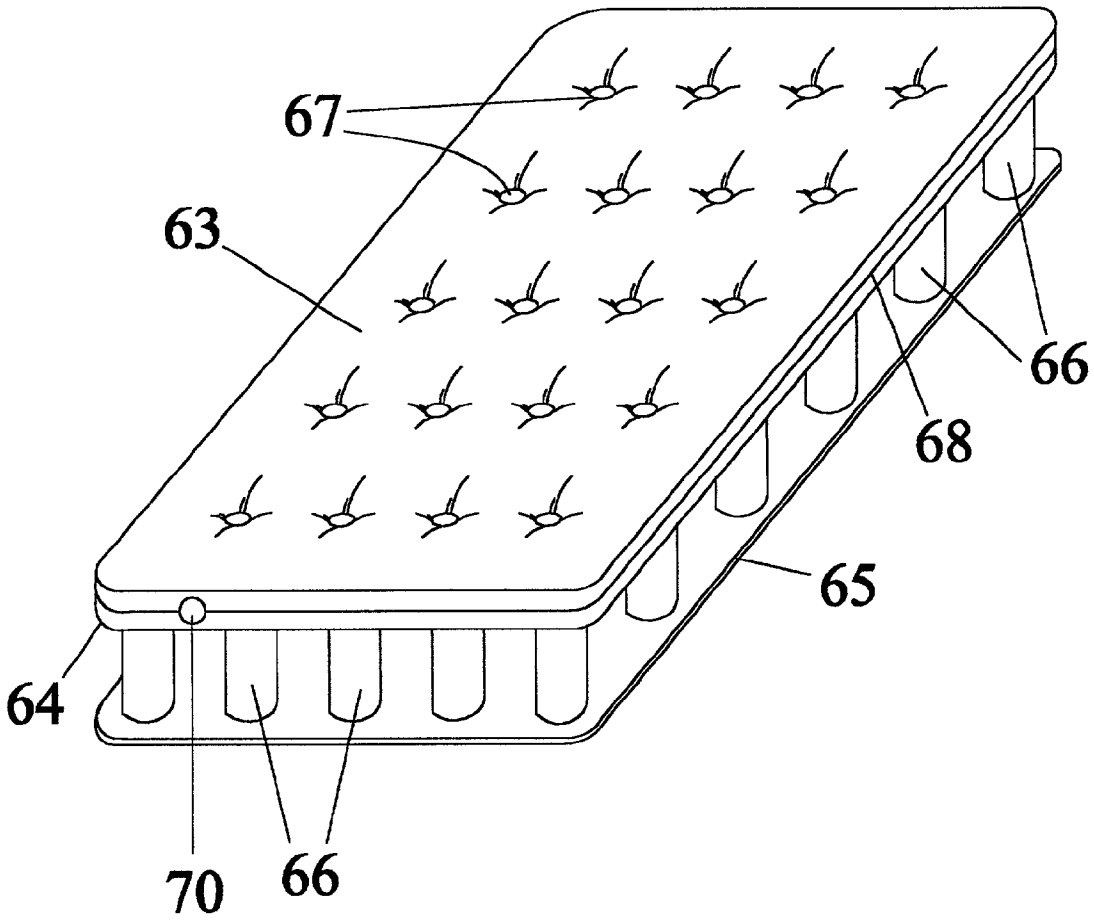


FIG. 6

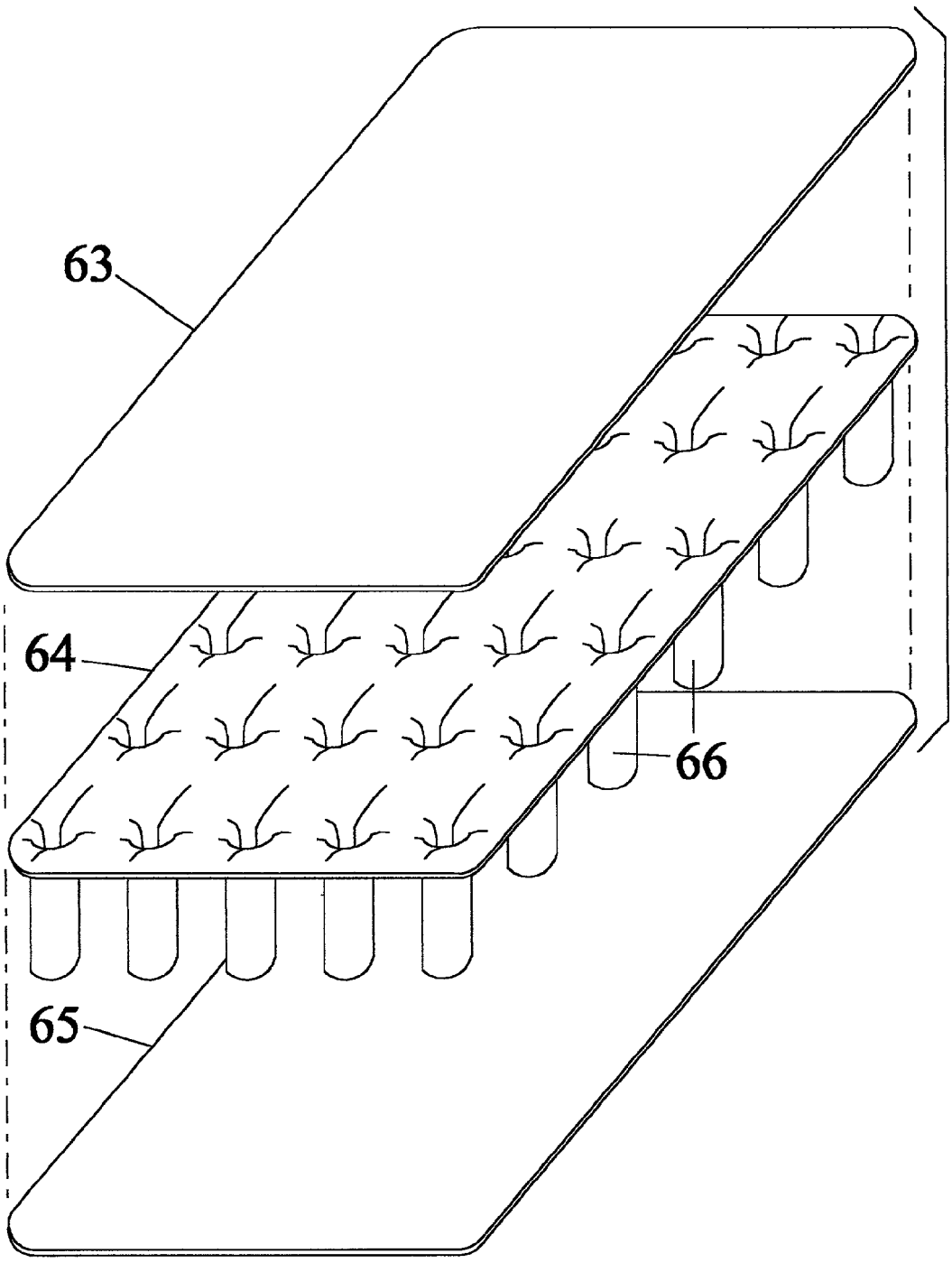


FIG. 7

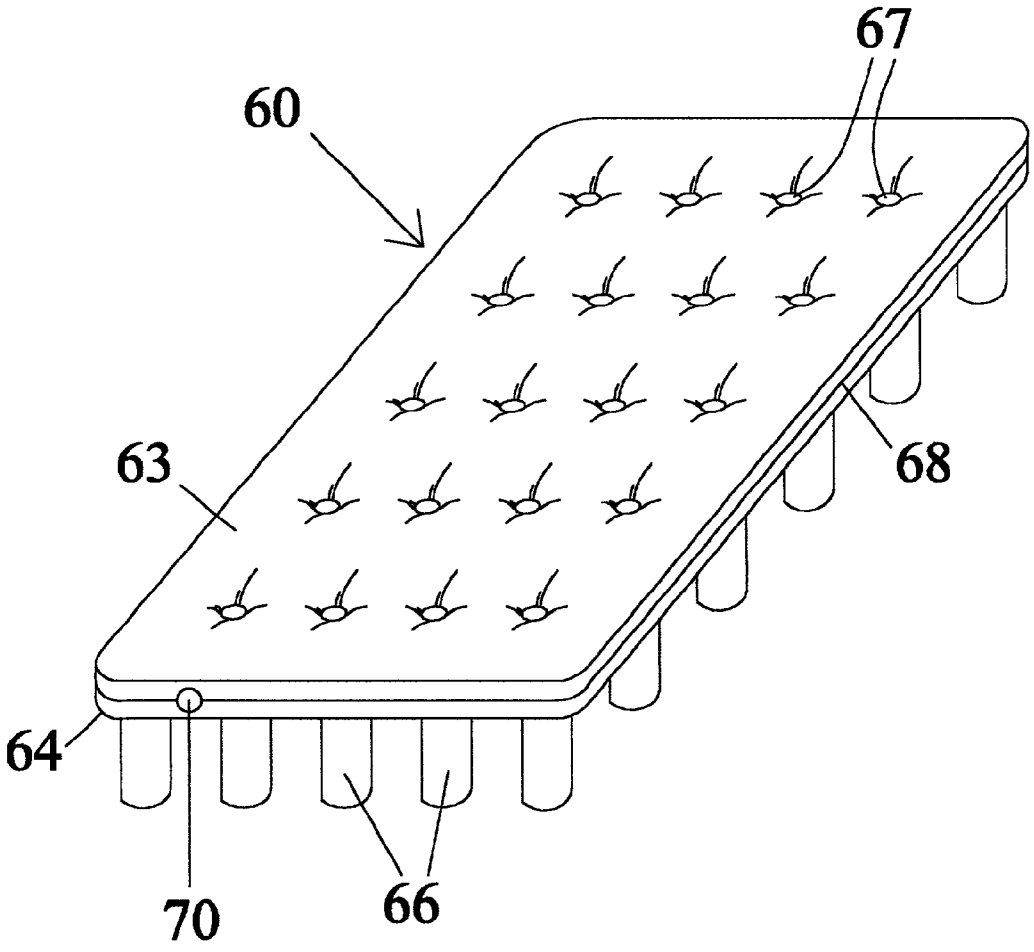


FIG. 8

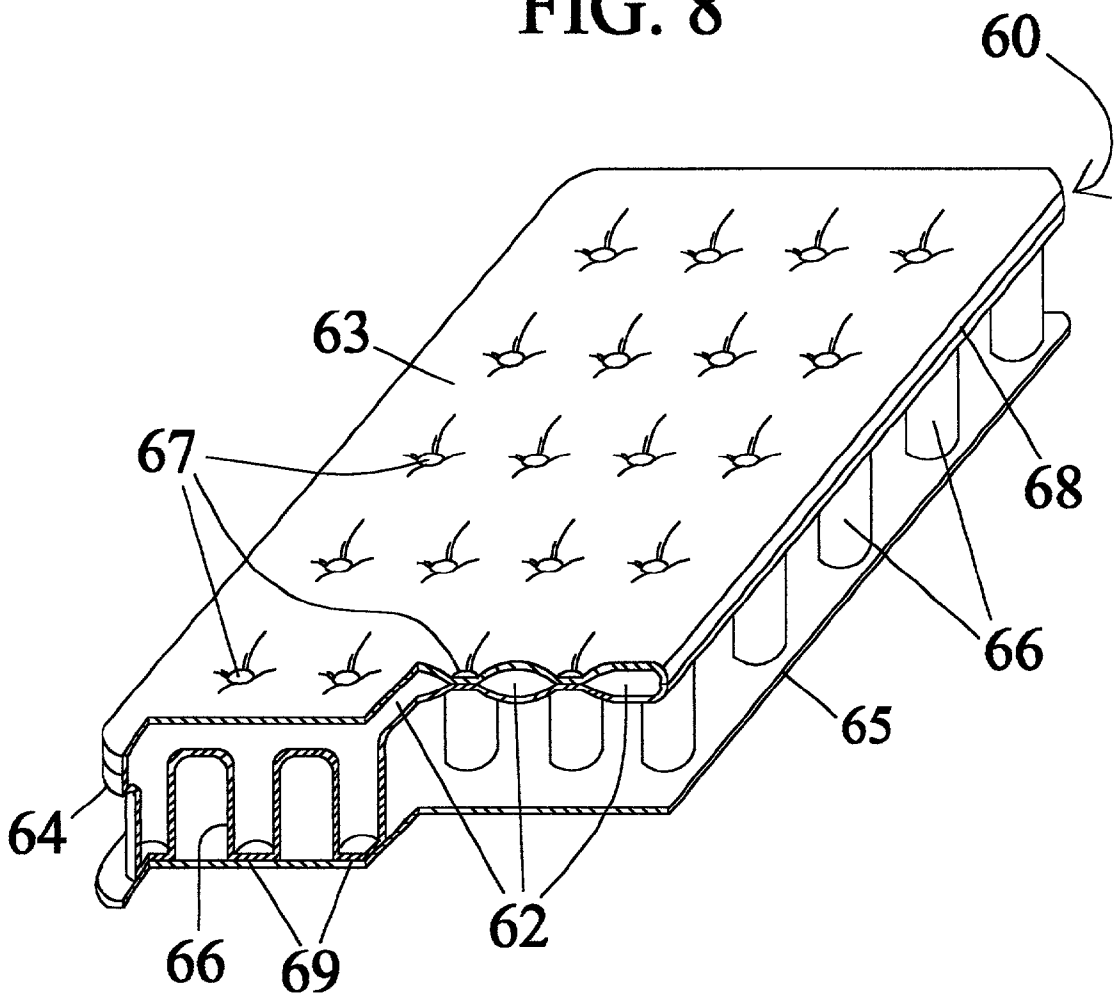
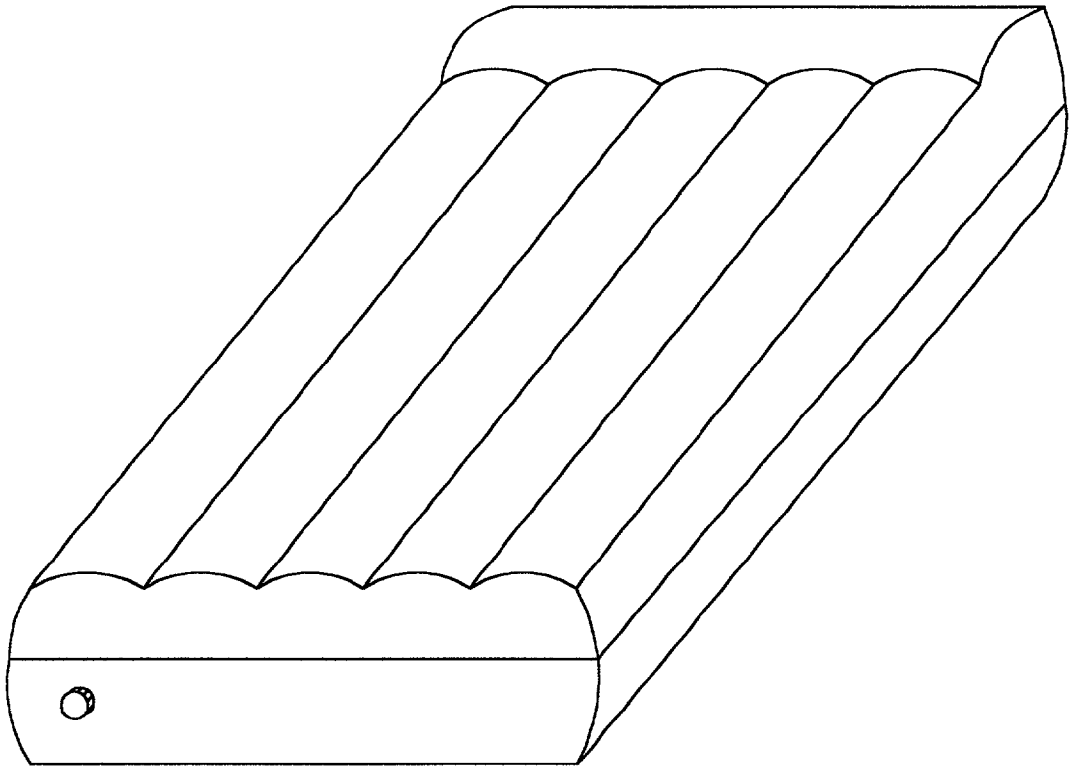


FIG. 9



PRIOR ART

FIG. 10

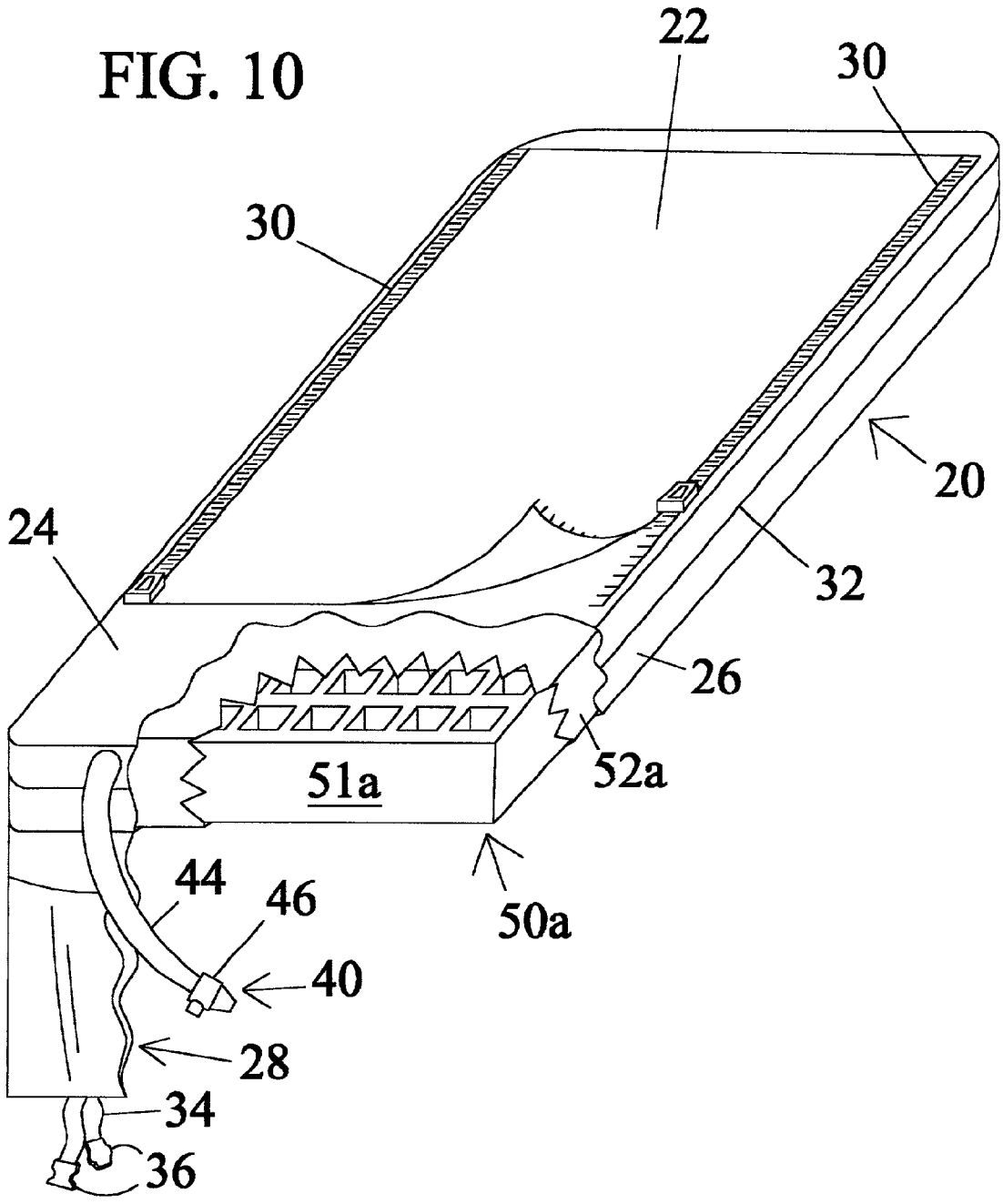


FIG. 11

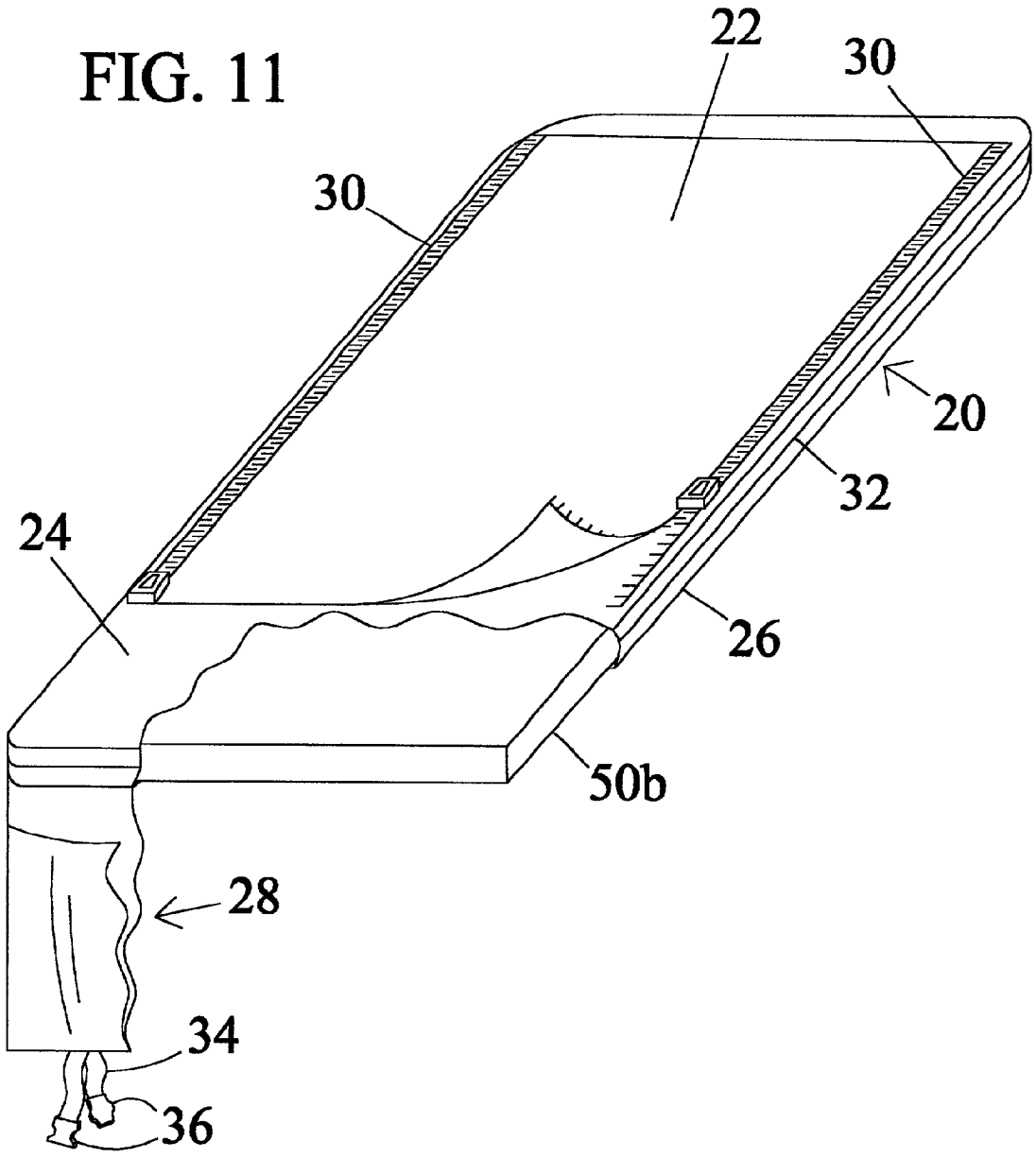


FIG. 12

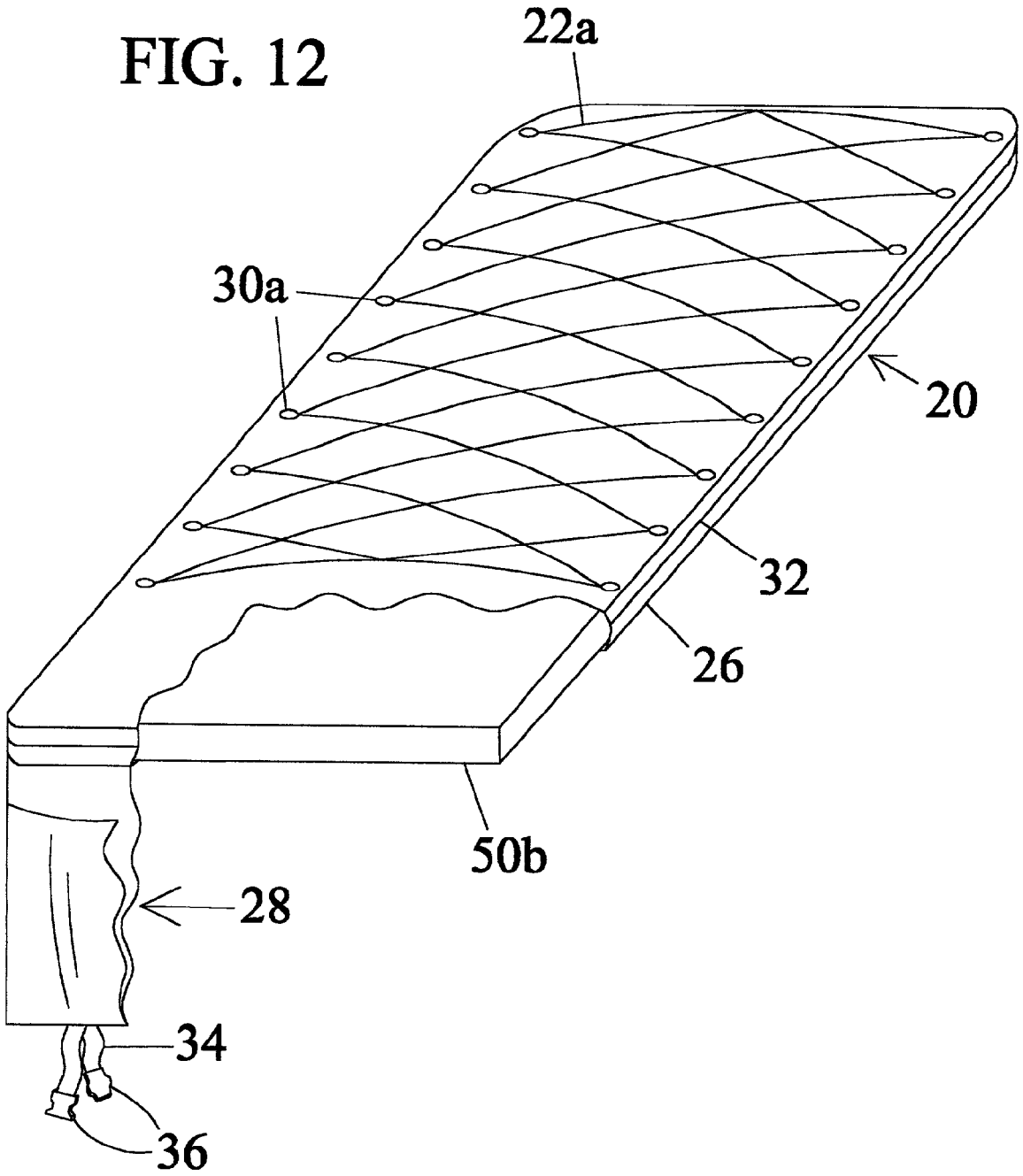
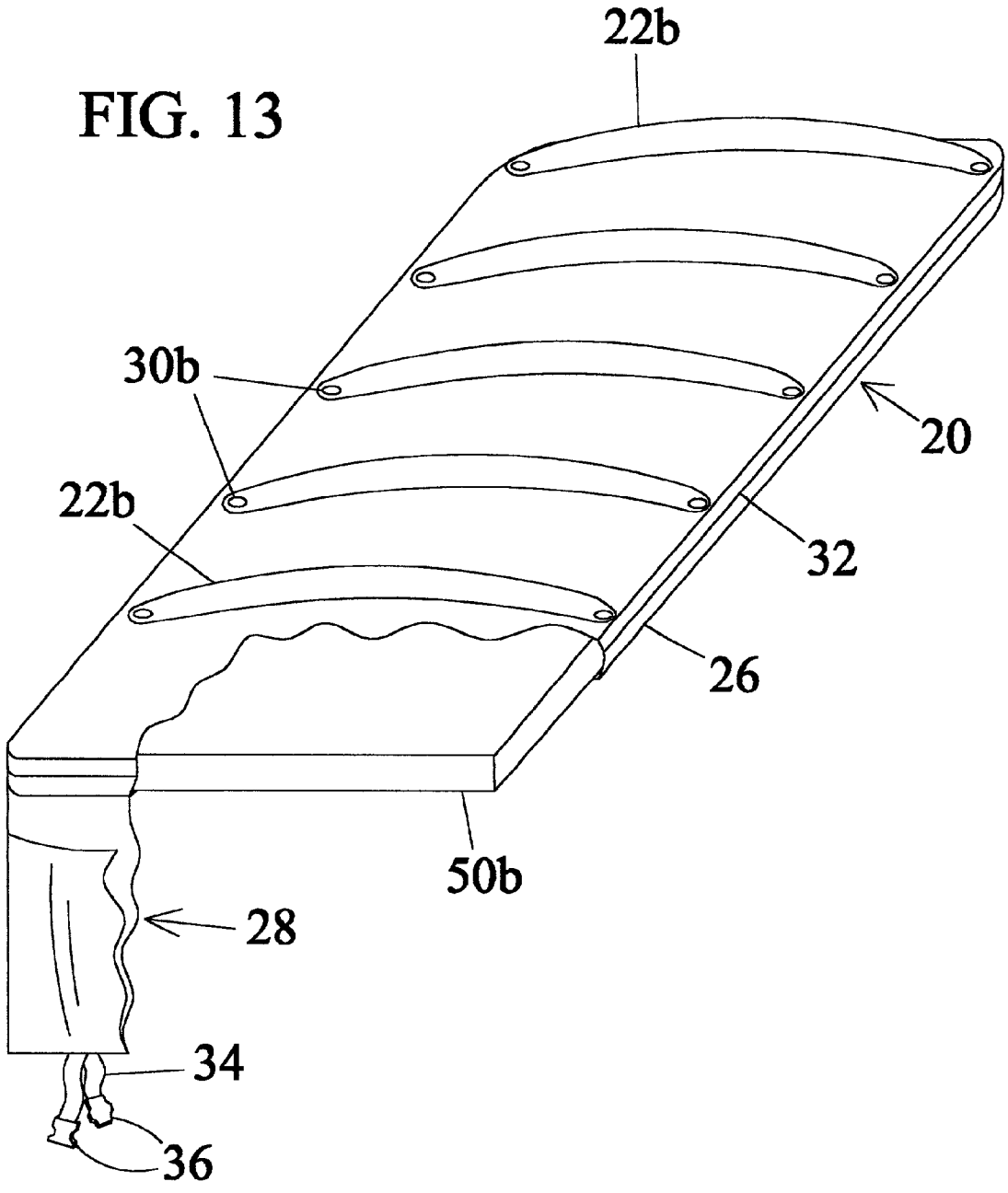


FIG. 13



SLEEPING DEVICE

CROSS REFERENCE/RELATED APPLICATION

[0001] This invention is related and complimentary to the invention of our co-pending application Ser. No. 09/793270, filed Feb. 22, 2001.

BACKGROUND

[0002] 1. Field of the Invention

[0003] The present invention relates to a mattress and more particularly to a mattress that is used for outdoor activities such as camping, hiking, backpacking, military purposes, and the like.

[0004] 2. Description of the Prior Art

[0005] Those who enjoy the outdoors and wilderness activities have always sought to bring some form of comfort along on their adventures and thus the conventional inflatable camping accessory has an extensive history in the prior art. Inflatable devices are desirable because when deflated they are light, compact, and easy to transport. The conventional air mattress for camping purposes is composed of an inflatable device that lies on the ground and onto which a sleeping bag is laid. Such conventional air mattresses, represented in the prior art as far back as U.S. Pat. No. 31048 to Williams, Jan. 1, 1861 to as recently as U.S. Pat. No. 5787531 to Pepe, Aug. 4, 1998 have a problem in that the camper fails to get sound sleep because the sleeping bag is prone to slipping off the mattress. If a large sized air mattress is used to prevent the sleeping bag from slipping off, then space economy is sacrificed. Large conventional air mattresses are also difficult to inflate. An inflating device is needed to blow up large conventional air mattresses or time is sacrificed while inflating them with one's own breath. If a small or thin mattress is used then the problem of slipping off becomes more apparent and the unit is not likely to separate the user sufficiently from a cold surface to provide good insulation. Undular terrain will also be felt when using a thin mattress.

[0006] Many solutions to this problem have been proposed in the prior art. Inflatable enclosures and tents, generally represented in the prior art by U.S. Pat. No. 1,324,009 to Hope, Dec. 2, 1919, U.S. Pat. No. 4,192,030 to Casson, Mar. 11, 1980, U.S. Pat. No. 4,605,029 to Russel, Aug. 12, 1986, and U.S. Pat. No. 5,669,088 to McNamee, Sep. 23, 1997 have been developed for the comfort and stability of a single camping person. These devices, while inventive, are undesirable because of their large size, the large volume of air needed to fill them, or their susceptibility to puncture.

[0007] Many inflatable sleeping bags have also been proposed to provide an extra level of comfort. These are generally represented in the prior art by U.S. Pat. No. 876,464 to Abbott, Oct. 1, 1907, U.S. Pat. No. 1,648,373 to Vilas, Nov. 8, 1927, U.S. Pat. No. 4,996,733 to Tsai, Mar. 5, 1991, and U.S. Pat. No. 5,005,236 to Hutchinson, Apr. 9, 1991. These again are more susceptible to puncture and require a large volume of air to fill. If an external inflating device is used it represents another piece of camping equipment to keep track of and more weight to transport.

[0008] The sleeping structures in U.S. Pat. No. 4,862,533 to Adams III, Sep. 5, 1989 and U.S. Pat. No. 5,640,725 to Ando et al., Jun. 24, 1997 provide a novel means of comfort by inserting inflatable elements into a sleeping bag. While achieving the goals of stability on the mattress and greater comfort, they again introduce complexity and additional pieces of equipment that have to be kept track of and transported. The volume of air needed to inflate the separate elements is also significant.

[0009] U.S. Pat. No. 3,965,504 to Ainsworth, Jun. 29, 1976 discloses a mattress and coverlet assembly. This device is not inflatable, generally not portable for backpacking, adds bulk and weight to the camping gear, uses many sheets to form a coverlet, and is not designed to receive a sleeping bag.

[0010] Other novel inflatable devices in the prior art use a cellular structure to inflate various cushions, packaging material and therapeutic mattresses. These devices are generally represented by U.S. Pat. No. 5,030,501 to Colvin et al., Jul. 9, 1991, U.S. Pat. No. 5,052,068 to Graebe, Oct. 1, 1991, U.S. Pat. No. 5,090,076 to Guldager, Feb. 5, 1992, and U.S. Pat. No. 5,640,731 to Toedter, Jun. 24, 1997. These devices work as proposed but none have been adapted to camping purposes. Many in the prior art are complicated, difficult to manufacture, and too fragile for outdoor use. None describe a cellular structure for the express purpose of reducing the amount of air needed to inflate the device.

Objects and Advantages

[0011] The primary object of the sleeping device is to provide a method of retaining a sleeping bag on top of a mattress. This will prevent the problem of comfortable sleep being disturbed by the sleeping bag slipping off the mattress.

[0012] It is second object of the sleeping device to provide an inflatable sleeping device that requires significantly less air to fill than any similar invention in the prior art.

[0013] It is a third object of the sleeping device to provide a means of carrying a sleeping bag and mattress as one consolidated unit.

[0014] It is a fourth object of the present invention to provide a means of making a larger mattress by joining single units of the present invention together.

[0015] It is a fifth object of the sleeping device to provide an integral protective cover so that the sleeping device, sleeping bag, and air-fill mechanism are not damaged while in a rolled-up configuration.

[0016] It is another object of the sleeping device to provide an extended air-fill mechanism that is easily accessible. Thus, the user can easily adjust the air pressure while lying on the device.

[0017] It is another object of the sleeping device to provide extra insulation above and below a user's sleeping bag. Thus, a lighter sleeping bag can be used, reducing the overall bulk and weight of the camping gear.

[0018] It is another object of the sleeping to provide a sleeping system where all the components are integral. In other words, the carrying sack, air-fill mechanism, and mattress are a completely self-contained unit.

[0019] It is another object of the sleeping device to protect the inflatable bladder by using a bottom fabric that is abrasion and puncture resistant.

[0020] It is another object of the sleeping device to provide a integral carrying sack that is puncture resistant.

[0021] More objects and advantages of the inflatable cushioning device will become apparent in the drawings and ensuing description.

SUMMARY OF THE INVENTION

[0022] In order to accomplish the preceding objects, the proposed sleeping device provides an inflatable mattress portion and a coverlet portion. The inflatable mattress portion has an interior of cellular gas-impermeable material surrounded by a protective outer layer of fabric. The inflatable mattress portion is joined to the coverlet portion at two opposing sides by separate slide fasteners. The mattress portion and coverlet portion form a pocket into which a sleeping bag is inserted. An extension flap is connected to the mattress portion. The extensions flap has straps that secure the mattress when in a rolled up configuration. An air fill mechanism is attached to the inflatable mattress portion. The air fill mechanism is comprised of a tube and a valve.

DESCRIPTION OF THE DRAWINGS

[0023] **FIG. 1** is an isometric side view of the sleeping device with the coverlet partially open.

[0024] **FIG. 1A** is an isometric exploded view of the major components that comprise the sleeping device.

[0025] **FIG. 2** is an enlarged plan bottom view of the extension flap showing how the straps are connected.

[0026] **FIG. 3** is an enlarged isometric view of the sleeping device in a rolled up configuration and protected by the extension flap.

[0027] **FIG. 4** is an isometric end view of the sleeping device with the fabric partially cut-away to reveal the inflatable bladder.

[0028] **FIG. 5** is an isometric end view of the inflatable bladder.

[0029] **FIG. 6** is an exploded isometric view of the three layers that comprise the inflatable bladder.

[0030] **FIG. 7** is an isometric view of the inflatable assembly.

[0031] **FIG. 8** is a cutaway isometric view of the inflatable bladder

[0032] **FIG. 9** is an isometric view of a conventional air mattress.

[0033] **FIG. 10** is an isometric end view of a self-inflating embodiment with the fabric and gas-impermeable shell partially cut-away.

[0034] **FIG. 11** is an isometric end view of a non-inflatable embodiment with the fabric partially cut-away.

[0035] **FIG. 12** is an embodiment of the sleeping device with the coverlet being netting.

[0036] **FIG. 13** is an embodiment of the sleeping device with the coverlet being a series of straps.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0037] **FIG. 1** shows that the sleeping device is composed principally of a mattress **20**, coverlet **22**, extension flap **28**, and air-fill mechanism **40**. These components are displayed separately in the exploded view of **FIG. 1A**. Referring back to **FIG. 1**, mattress **20** is comprised of a top layer of fabric **24** and a bottom layer of fabric **26**. These two layers are joined to each other along their periphery, hereafter referred to as outside seam **32**. The two layers surround an interior inflatable device or cushioning material. Mattress **20** and coverlet **22** are joined to each other along two opposing sides by separate slide fasteners **30**. Extension flap **28** is connected to one end of mattress **20**. Extension flap **28** is sewn in the shape of an envelope and acts as a protective cover when the sleeping device is in a rolled-up configuration. Straps **34** with snap-in connectors **36** are attached to extension flap **28**. Air-fill mechanism **40** extends out through a hole in top layer of fabric **24** at the same end as extension flap **28**.

[0038] **FIG. 2** is a partial bottom view of the sleeping device. Extension flap **28** is connected to bottom fabric **26**. Straps **34** with connectors **36** on each end are joined to extension flap **28**.

[0039] **FIG. 3** is an enlarged depiction of the sleeping device in a deflated rolled-up configuration. Extension flap **28** envelops the sleeping device. The sleeping device is held in this configuration by straps **34**.

[0040] **FIG. 4** shows inflatable bladder **50** in the area where the fabric of the sleeping device is partially cut-away. Air-fill mechanism **40** is also shown. The main portion of air-fill mechanism **40** is air-fill tube **44**. Air-fill tube **44** is comprised of a flexible gas-impermeable material. Air fill-tube **44** is connected to inflatable bladder **50** and extends out through a hole in top layer of fabric **24**. A valve **46** is connected to the other end of air-fill tube **44**.

[0041] **FIG. 5** depicts inflatable bladder **50** in greater detail. The device is comprised of three layers of flexible gas-impermeable material. The three layers can be seen individually in the exploded view of **FIG. 6**. **FIG. 6** depicts flat layer **63** on top. Protrusion layer **64** is in the middle. Protrusion layer **64** is formed with spaced protrusions **66** that appear as cylindrical structures. Stabilizing layer **65** is on the bottom. Referring back to **FIG. 5**, flat layer **63** on top is sealed to protrusion layer **64** that is in the middle. The tips of spaced protrusions **66** are secured to stabilizing layer **65** that is on the bottom. Referring to **FIG. 5** in more detail, flat layer **63** and protrusion layer **64** are sealed at their respective peripheries, hereafter referred to as periphery seal **68**. Flat layer **63** and protrusion layer **64** are also sealed together at various locations between spaced protrusions **66**, hereafter referred to as manifold seals **67**.

[0042] Referring to **FIG. 7**, sealing flat layer **63** and protrusion layer **64** along periphery seal **68** and manifold seals **67** forms an inflatable assembly **60**. An inflation and deflation port **70** is provided for the attachment of air-fill mechanism **40**.

[0043] **FIG. 8** is a cutaway isometric view of inflatable bladder **50**. The manifold seals **67** in the cutaway are depicted as interior junctions between flat layer **63** and protrusion layer **64**. The manifold seals **67** maintain the structural integrity of the inflatable assembly and form manifold area **62** through which air is distributed to spaced protrusions **66**. Also seen in the cutaway portion of **FIG. 8** are spaced protrusions **66** that are in fluid communication with each other through manifold area **62**. Also shown in

FIG. 8 is stabilizing layer **65**. Stabilizing layer **65** is sealed to the inflatable assembly **60** at the tips of spaced protrusions **66**. The sealed locations, hereafter referred to as tip seals **69**, occur at the junctions between the tips of spaced protrusions **66** and stabilizing layer **65**.

Operation of the Preferred Embodiment

[**0044**] With the sleeping device constructed as shown in the foregoing, a user can start the use thereof by inflating inflatable bladder **50** through valve **46** and air-fill tube **44**.

[**0045**] When inflatable bladder **50** is inflated, the spaced protrusions **66** support a load placed on the sleeping device in **FIG. 1**. Spaced protrusions **66** are laterally stabilized by stabilizing layer **65** and thus do not deflect out of their vertical orientation. The distance between spaced protrusions **66** is such that the volume of air needed to fill the sleeping device is significantly less than any inflatable device of the same size in the prior art. This novelty will become more apparent by comparing **FIG. 9** with **FIG. 5**. **FIG. 9** represents a conventional inflatable mattress having the same dimensions as inflatable bladder **50** in **FIG. 5** but without spaced protrusions **66**. In order to inflate the mattress in **FIG. 9**, one must fill its entire volume with air. This volume of air is significantly greater than the volume needed to fill the inflatable bladder **50** in **FIG. 5**. Considering the inflatable bladder **50** in **FIG. 5**, in an embodiment where spaced protrusions **66** are cylindrical and regularly spaced at a distance equal to their diameter, the volume of air required to fill it to full size could be as little as one-fifth the volume needed to fill the mattress shown in **FIG. 9**.

[**0046**] When inflatable bladder **50** is sufficiently inflated valve **46** is closed. Next, a slide fastener **30** is opened and coverlet **22** is folded to one side. Next, a sleeping bag is laid onto mattress **20**. When coverlet **22** is folded back, over the sleeping bag, and the previously opened slide fastener **30** is closed the sleeping bag is essentially contained in a pocket and will not shift or slip off mattress **20**. Thus, comfortable sleep will not be disturbed.

[**0047**] When the user is finished sleeping and needs to transport the sleeping device and sleeping bag, they can both be rolled up as one with bottom fabric **26** on the exterior. Bottom fabric **26** is preferably a strong puncture-resistant material that will protect the sleeping device and sleeping bag while in a rolled-up configuration. Extension flap **28** is also composed of a strong puncture-resistant material. Extension flap **28** envelops the sleeping device while in the rolled-up configuration and thus provides an extra layer of protection to the sleeping device and sleeping bag during transport.

[**0048**] Slide fasteners **30** can be used to join coverlet **22** and mattress **20** of one sleeping device to coverlet **22** and mattress **20** of another identical sleeping device to form a larger sleeping area suitable for more than one person.

Description of a Second Embodiment

[**0049**] **FIG. 10** is an embodiment where the interior of mattress portion **20** is comprised of a self-inflating bladder **50***a*. The interior of self-inflating bladder **50***a* is comprised of expandable foam **51***a*. Expandable foam **51***a* is surrounded by a gas-impermeable shell **52***a*. Gas impermeable shell **52***a* is partially cut-away in this view for the purpose of revealing expandable foam **51***a*. Sealed to gas-impermeable shell **52***a* of self-inflating bladder **50***a* is air-fill mechanism **40**. Air-fill mechanism **40** is constructed and connected to the second embodiment in a similar manner as in the preferred embodiment.

Operation of the Second Embodiment

[**0050**] The second embodiment is operated in the same manner as the preferred embodiment except for the air-fill mechanism **40**. In the second embodiment, valve **46** is opened and air begins flowing into self-inflating bladder **50***a* because of the expansion of expandable foam **51***a*. When the sleeping device is rolled up, expandable foam **51***a* is compressed, and air is forced out of the sleeping device through the opened valve **46**.

Description of a Third Embodiment

[**0051**] **FIG. 11** depicts an embodiment where the interior of mattress **20** is comprised of cushioning foam **50***b*.

Operation of the Third Embodiment

[**0052**] The third embodiment is operated in the same manner as the preceding embodiments except that it is not inflatable and thus requires no air-fill mechanism.

Description and Operation of a Fourth Embodiment

[**0053**] **FIG. 12** depicts an embodiment where the coverlet portion is a netting coverlet **22***a* constructed of a netting material and fastened to mattress **20** by snaps **30***a*. Netting coverlet **22***a* performs the same function as coverlet **22**.

Description and Operation of a Fifth Embodiment

[**0054**] **FIG. 13** depicts an embodiment where the coverlet portion is a series of straps, hereafter referred to as strap coverlet **22***b*. Strap coverlet **22***b* is fastened to mattress **20** by buttons **30***b*. Strap coverlet **22***b* performs the same function as coverlet **22**.

Conclusion and Scope

[**0055**] As one can see from the preceding description, this new and novel method of constructing a mattress, suitable for camping and other purposes, has many advantages. The primary advantage is that a user does not have to worry about his or her sleeping bag shifting or slipping off the mattress. A second advantage is that mattress **20**, coverlet **22**, air-fill mechanism **40**, extension flap **28**, and a sleeping bag can be stored and transported as a single integral unit making it significantly easier to bring along on camping or backpacking trips. The preferred embodiment is also easy to fill with air, requires significantly less air to fill than other mattresses in the prior art, and readily conforms to the ground. The sleeping device also provides an extra layer of insulation, allowing the camper to use a lighter sleeping bag, and thus reducing the bulk and weight of the camping gear.

[**0056**] It is recognized that many simple modifications could be made to the sleeping device without departing from the spirit and scope of the invention. The connectors **36** on straps **34** could be any suitable connector or the straps could simply be tied in order to secure the sleeping device in a rolled-up configuration. Valve **46** could be any suitable valve that allows airflow into the inflatable bladder **50** or self-

inflating bladder **50***a*. Air fill mechanism **40** could be attached in any number of ways to inflatable bladder **50** or self-inflating bladder **50***a*, so long as it is an airtight connection. Slide fasteners **30**, snaps **30***a*, and buttons **30***b* could be zippers, Velcro, hook and loop fasteners, or any other type of fastener as long as they held coverlet **22** to mattress **20**. Connecting the fabrics of the sleeping could be accomplished by gluing, sewing, heat-sealing, or any other means of securing fabrics together. Additionally, top fabric **24**, bottom fabric **26**, coverlet **22**, and extension flap **28**, could all be comprised of the same material.

[**0057**] These modifications and others that do not depart from the spirit and scope of the invention will be apparent to those skilled in the art. Thus, the scope of the invention is not to be limited by the specification and is rather to be determined by the appended claims.

List of Reference Numerals

[**0058**] **20**—mattress

[**0059**] **22**—coverlet

[**0060**] **22***a*—netting coverlet

[**0061**] **22***b*—strap coverlet

[**0062**] **24**—top fabric

[**0063**] **26**—bottom fabric

[**0064**] **28**—extension flap

[**0065**] **30**—slide fastener

[**0066**] **30***a*—snaps

[**0067**] **30***b*—buttons

[**0068**] **32**—outside seam

[**0069**] **34**—straps

[**0070**] **36**—connector

[**0071**] **40**—air-fill mechanism

[**0072**] **44**—air-fill tube

[**0073**] **46**—valve

[**0074**] **50**—inflatable bladder

[**0075**] **50***a*—self-inflating bladder

[**0076**] **50***b*—cushioning foam

[**0077**] **51***a*—expandable foam

[**0078**] **52***a*—gas-impermeable shell

[**0079**] **60**—inflatable assembly

[**0080**] **62**—manifold area

[**0081**] **63**—flat layer

[**0082**] **64**—protrusion layer

[**0083**] **65**—stabilizing layer

[**0084**] **66**—spaced protrusion

[**0085**] **67**—manifold seal

[**0086**] **68**—outside seal

[**0087**] **69**—tip-to-tip seal

[**0088**] **70**—inflation port

What is claimed is:

1. A sleeping device comprising:

a mattress,

and a coverlet, said coverlet being fastened to said mattress,

whereby said coverlet and said mattress form a pocket into which a sleeping bag is inserted.

2. The sleeping device of claim 1 wherein said coverlet is a continuous sheet of fabric.

3. The sleeping device of claim 1 wherein said coverlet is netting material.

4. The sleeping device of claim 1 wherein said coverlet is a series of straps.

5. The sleeping device of claim 1 wherein said coverlet is fastened to said mattress by slide fasteners.

6. The sleeping device of claim 1 wherein said coverlet is fastened to said mattress by snaps.

7. The sleeping device of claim 1 wherein said coverlet is fastened to said mattress by buttons.

8. The sleeping device of claim 1 further including an integrated protective flap, said integrated protective flap is a pouch that encases said inflatable mattress, said coverlet, and said air fill mechanism during transport and storage.

9. A sleeping device comprising:

an inflatable mattress, wherein said inflatable mattress has an inflatable bladder and outer covering of protective fabric material,

a coverlet, said coverlet being fastened to said inflatable mattress, whereby fastening said inflatable mattress to said coverlet forms a pocket into which a sleeping bag is inserted,

an air fill mechanism, wherein said air fill mechanism is a valve and a tube connected to said inflatable bladder and is accessible on the outside of said sleeping device,

and an integrated protective flap, wherein said integrated protective flap is a pouch that encases said inflatable mattress, said coverlet, and said air fill mechanism during transport and storage.

10. The sleeping device of claim 9 wherein said inflatable bladder is comprised of:

a layer of flexible gas impermeable material containing a plurality of spaced protrusions,

a flat layer of gas impermeable material of similar size and shape sealed to said layer at its periphery and at various locations between said spaced protrusions to form an inflatable assembly, wherein said spaced protrusions extend away from said flat layer and said spaced protrusions are in fluid communication with each other,

a port for inflation and deflation in said inflatable assembly for the attachment of an inflationary means,

and an additional flat layer of similar size and shape connected to the tips of all said spaced protrusions of said inflatable assembly,

whereby said spaced protrusions are laterally stabilized by their connection to said additional flat layer, are spaced

to minimize the volume of air needed to fill said inflatable assembly, and support a load on the structure when inflated.

11. The sleeping device of claim 9 wherein said inflatable bladder is a self inflating bladder containing expandable foam surrounded by a gas impermeable shell.

12. A sleeping device comprising:

a foam mattress, said foam mattress having a foam interior surrounded by an outer layer of protective fabric,

a coverlet, said coverlet being fastened to said foam mattress, whereby fastening said foam mattress to said coverlet forms a pocket into which a sleeping bag is inserted,

and an integral protective flap, wherein said integrated protective flap is a pouch that encases said inflatable mattress, said coverlet, and said air fill mechanism during transport and storage.

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