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(54) **INTEGRATED STORAGE SYSTEM**

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(57) **ABSTRACT**

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A storage and transportation system includes an inflatable article, a storage and transport apparatus connected to the inflatable article via a connector, the storage and transport apparatus including a closed end, an open end and a sidewall disposed substantially between the open end and the closed end, the sidewall defining a first surface and a second surface, a first cavity formed by the first surface and the closed end when the storage and transportation system is disposed in a first position and a second cavity formed by the second surface and the closed end when the storage and transportation system is disposed in a second position, and an aperture defined by the open end.

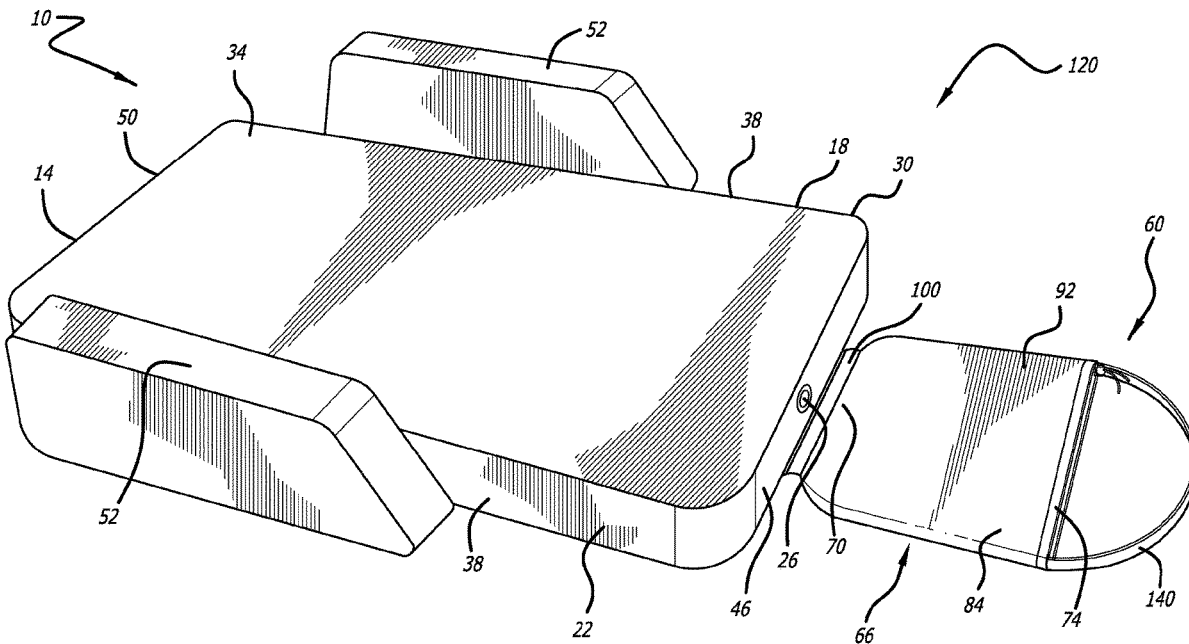
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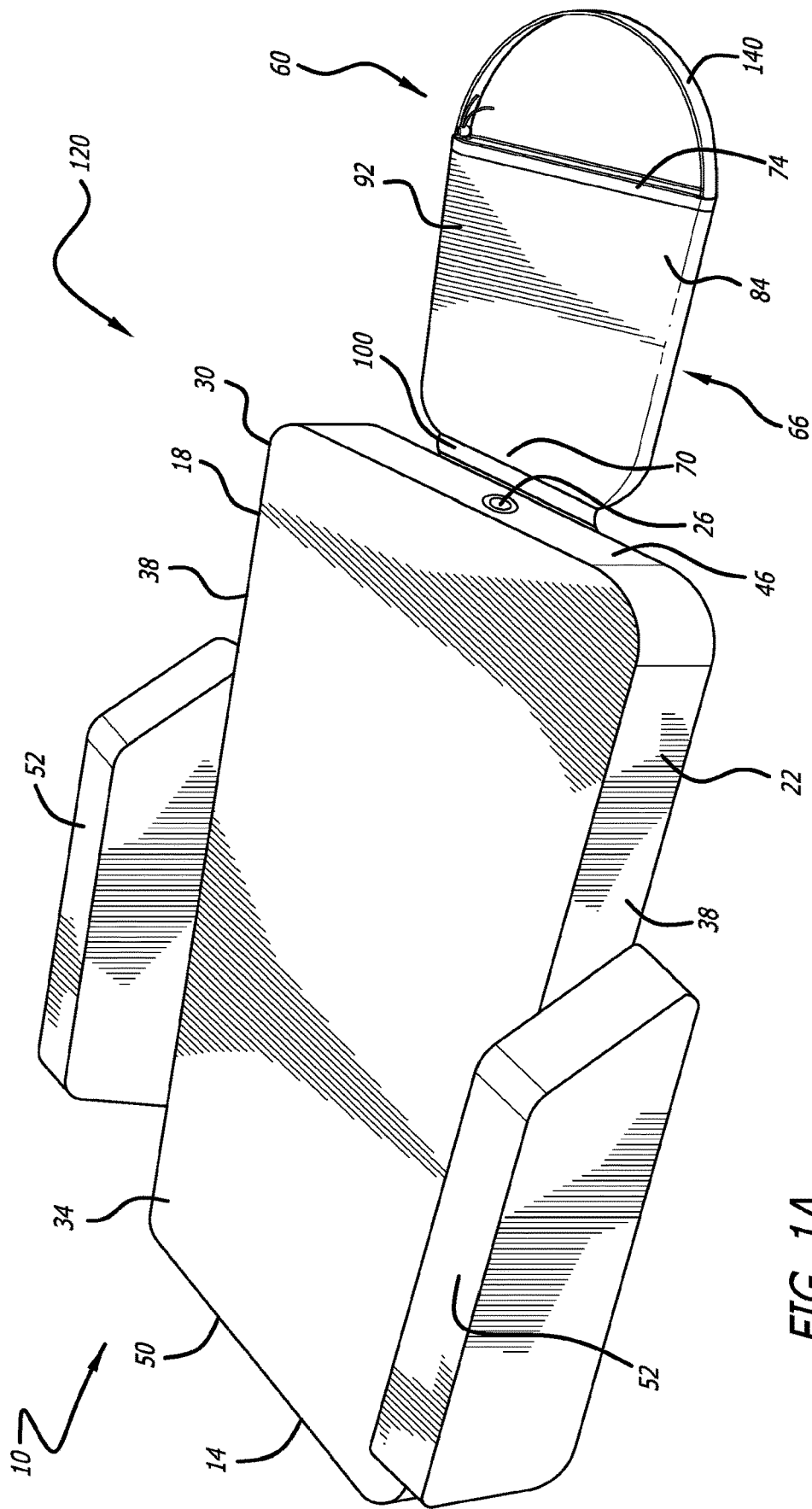


FIG. 1A

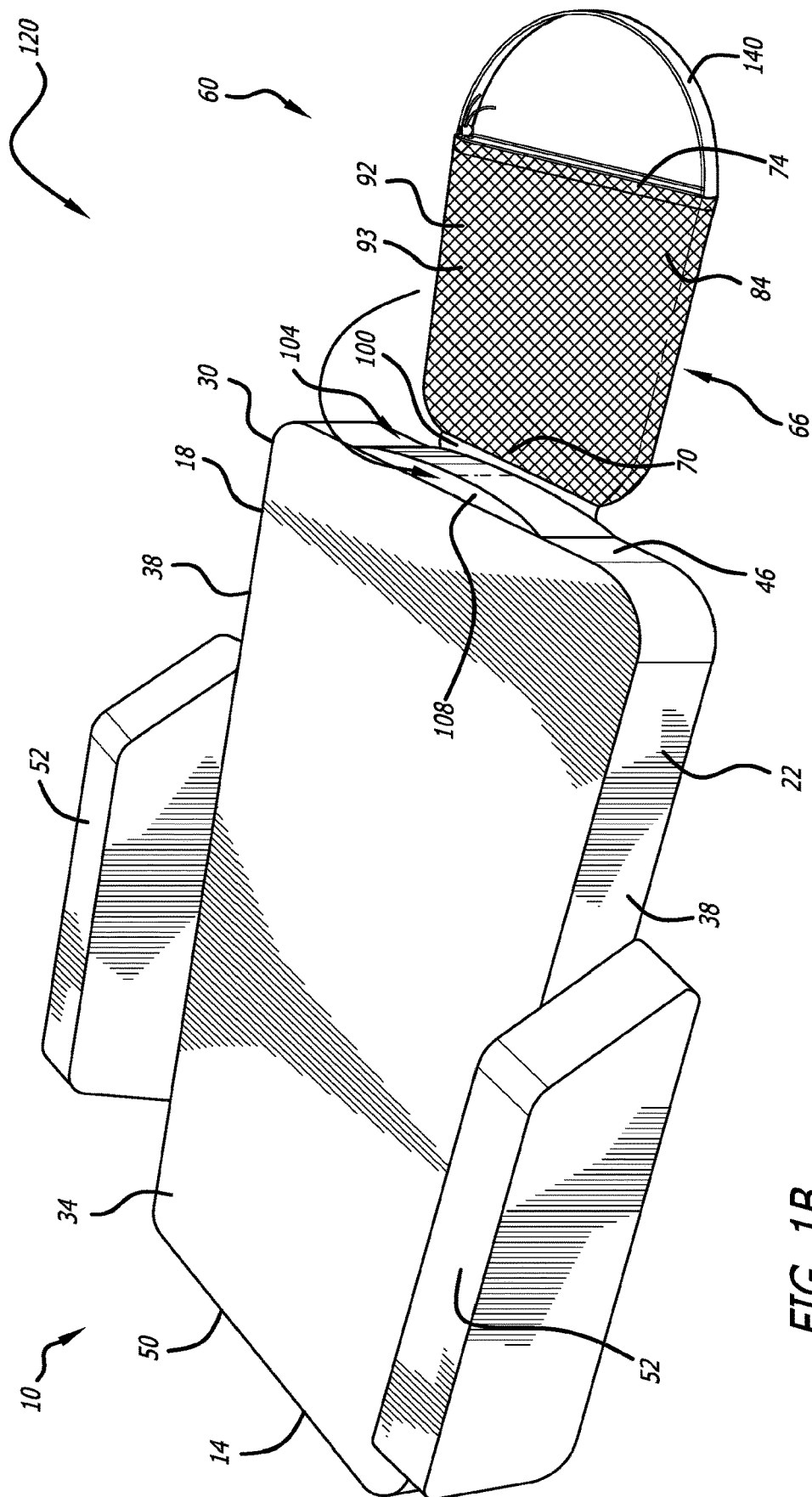


FIG. 1B

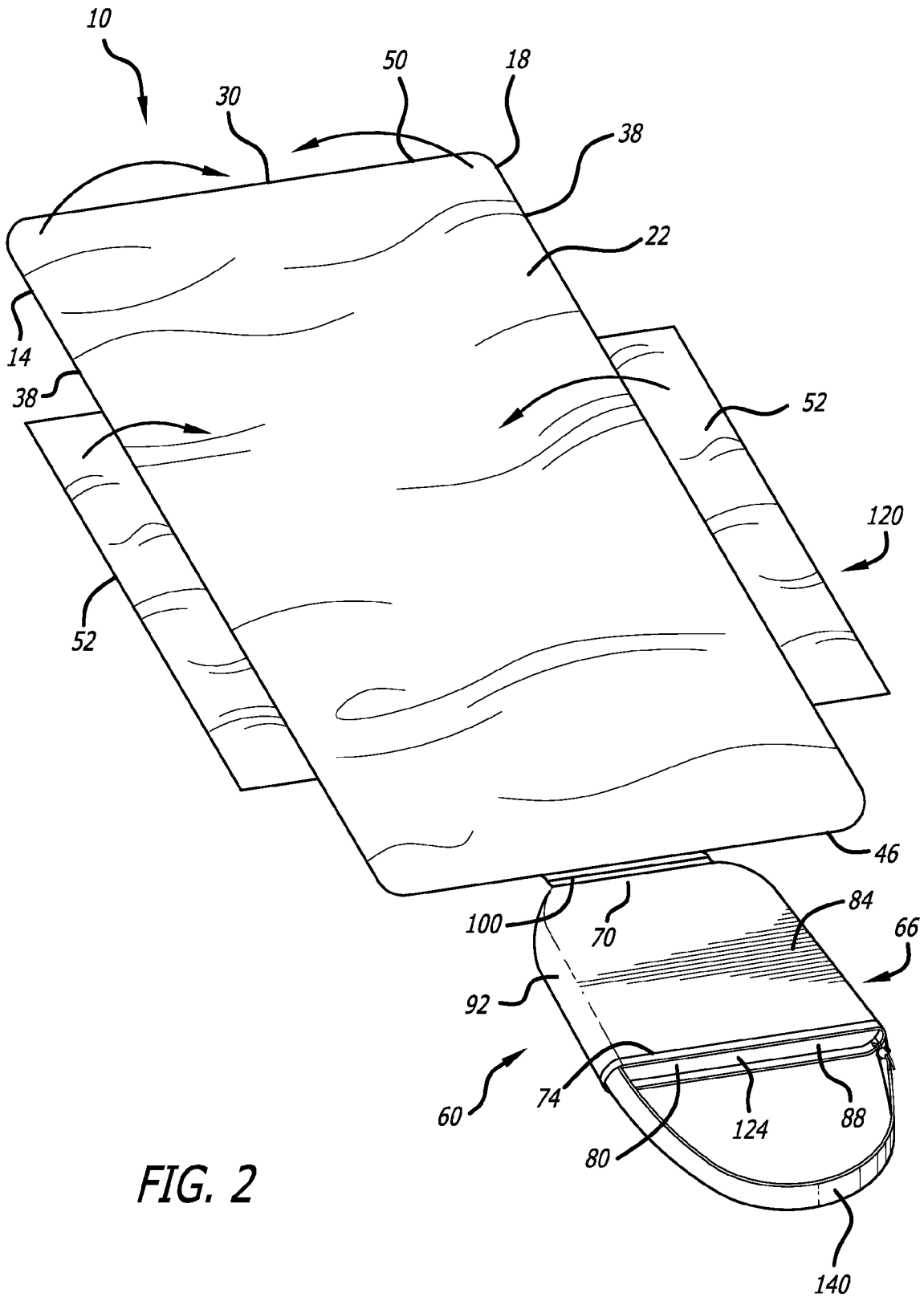


FIG. 2

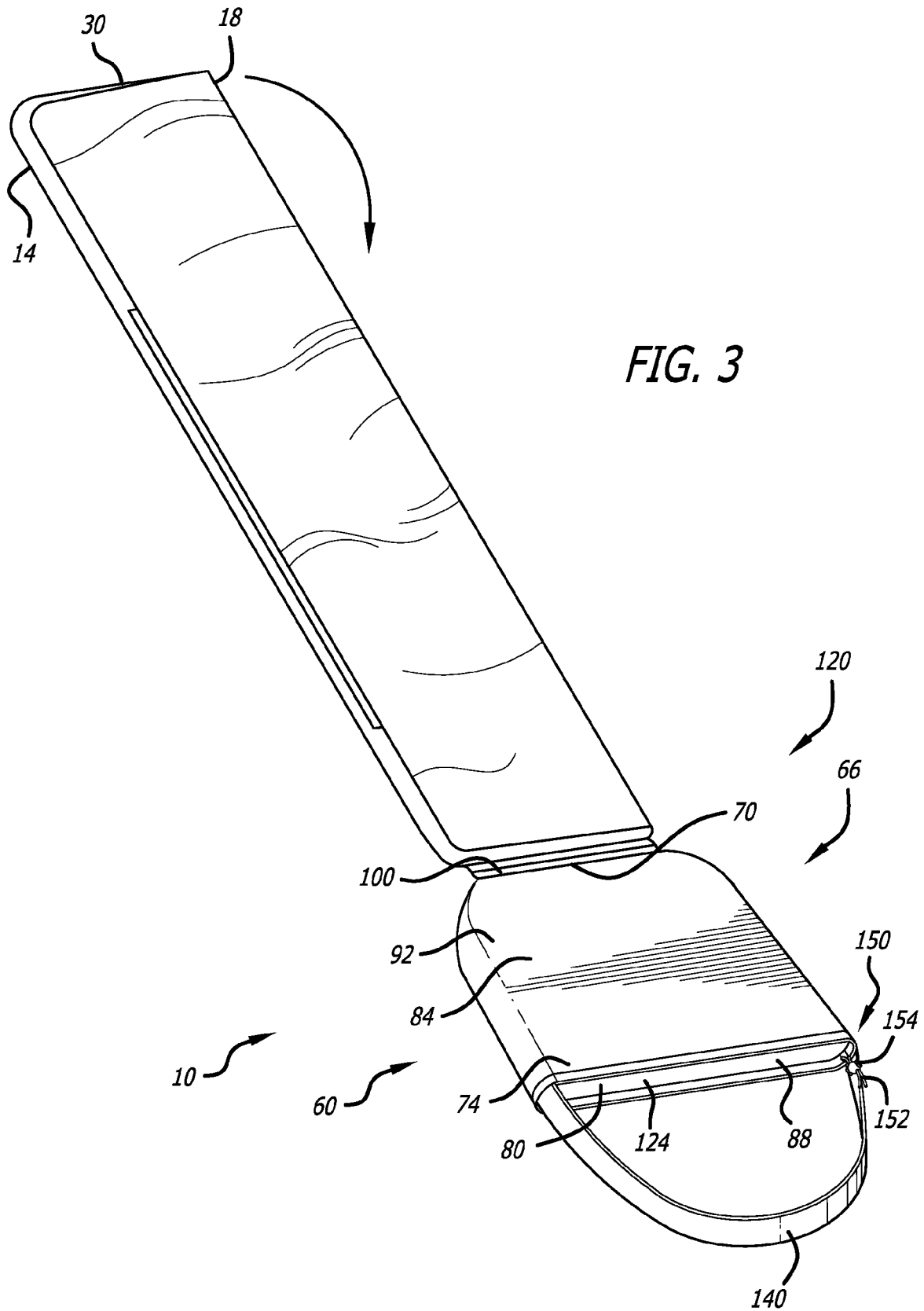


FIG. 4

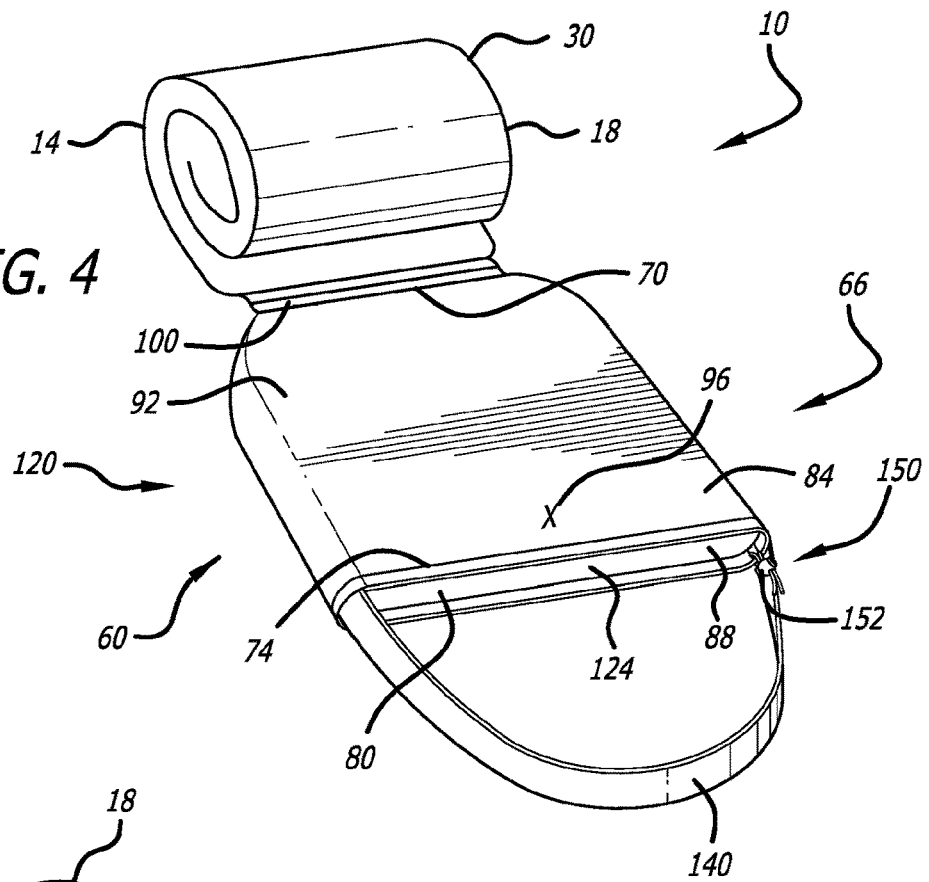


FIG. 5

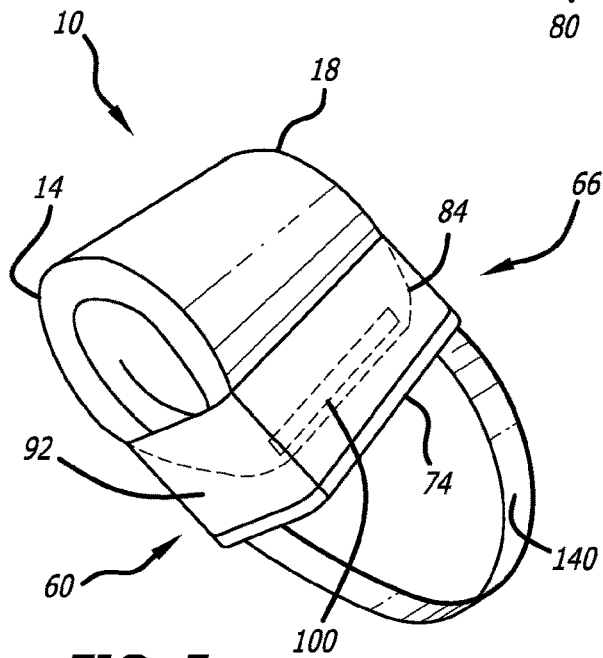
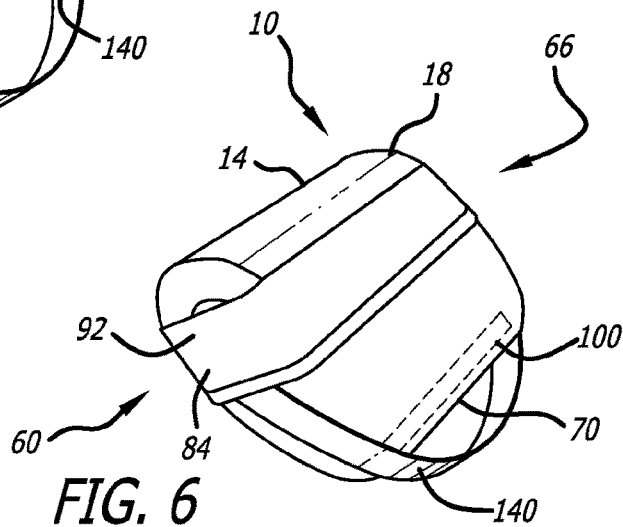
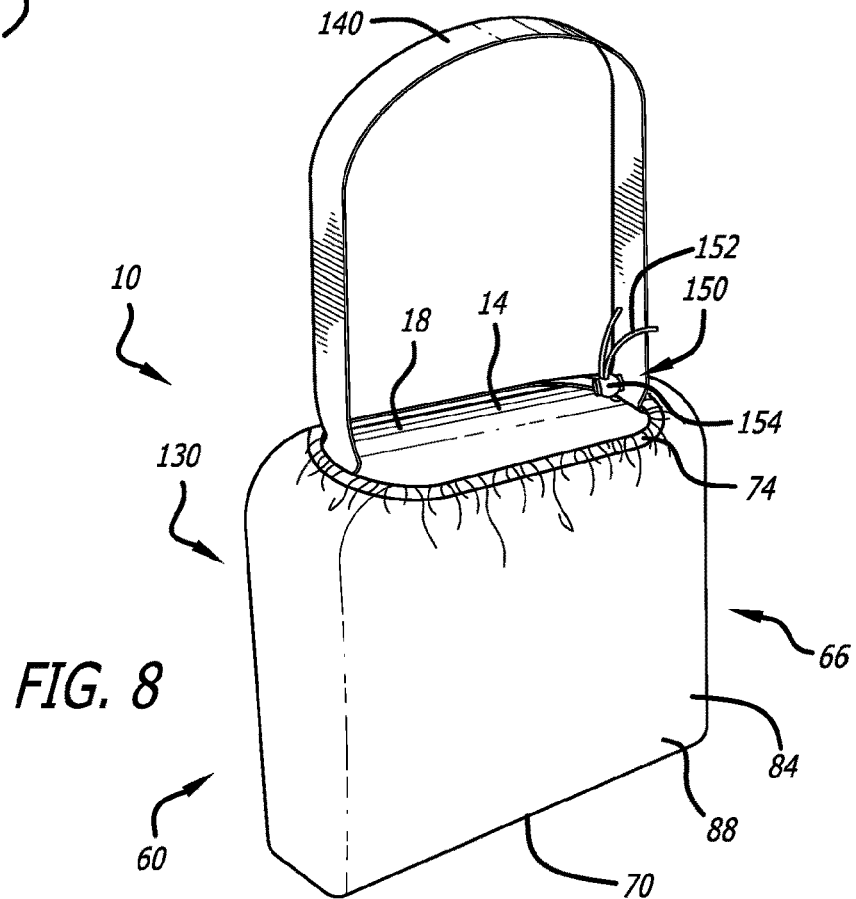
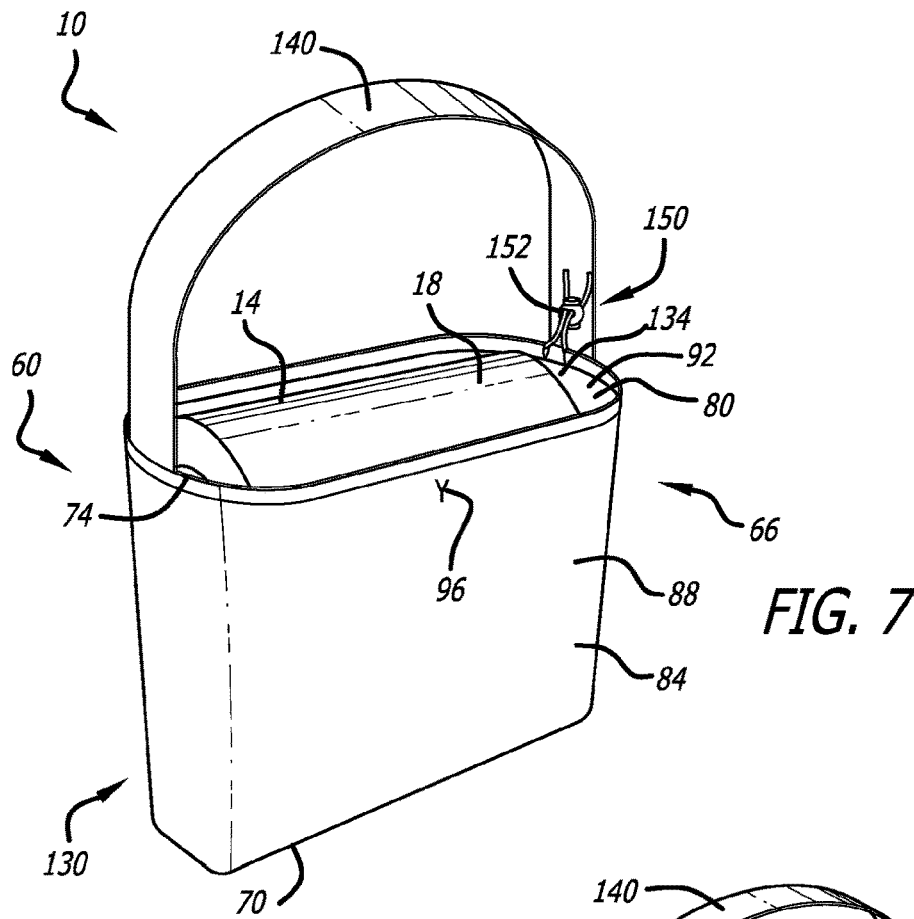


FIG. 6





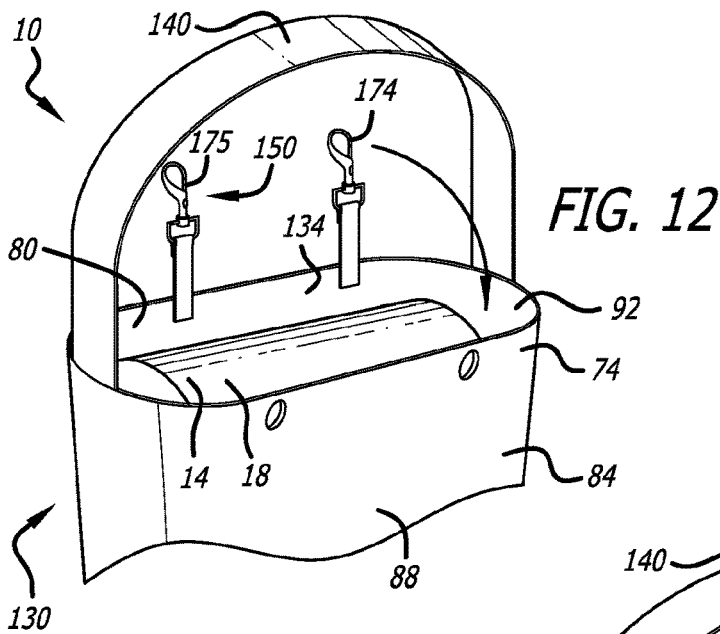


FIG. 12

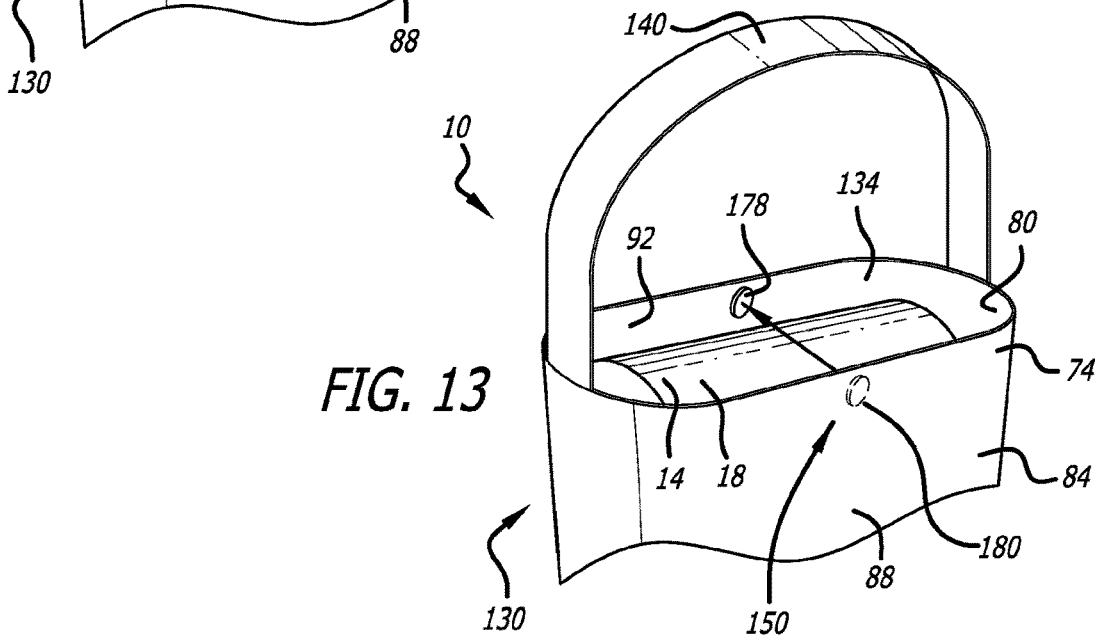


FIG. 13

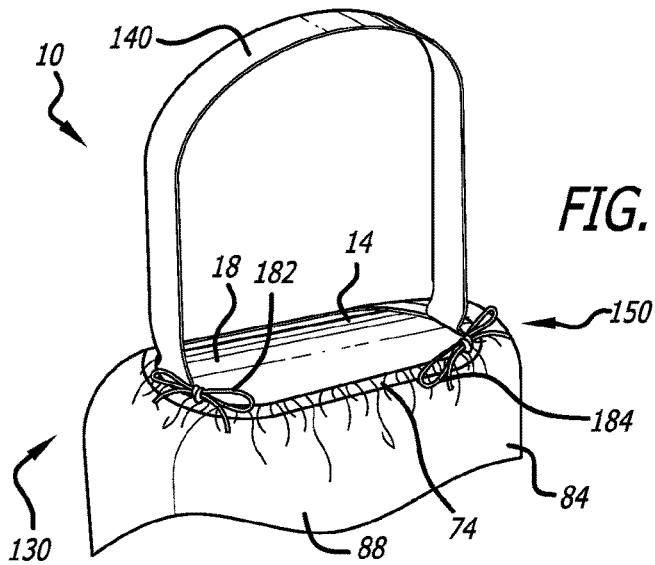


FIG. 14

INTEGRATED STORAGE SYSTEM

TECHNICAL FIELD

[0001] The present disclosure generally relates to article storage. In particular, an article and an attached storage and transport apparatus is provided.

BACKGROUND

[0002] Standard storage systems are generally known in the art. Some storage systems include features such as selectively sealable openings for enhanced security, while others include various materials for a range of storage properties. However, conventional storage systems are generally not integrated with an article to be stored, resulting in reduced system convenience and utility. Further, known storage systems do not include one or more of integrated closure systems and carrying systems. The accessories or integrated features available on known storage systems do not purposefully and effectively address these issues. The present disclosure seeks to overcome some limitations and other drawbacks of the prior art, and to provide new features not heretofore available. A full discussion of the features and advantages of the present disclosure is deferred to the following detailed description, which proceeds with reference to the accompanying drawings.

SUMMARY

[0003] In some implementations of the present disclosure, a storage and transportation system is provided. The storage and transportation system includes an inflatable article, a storage and transport apparatus connected to the inflatable article via a connector, the storage and transport apparatus including a closed end, an open end and a sidewall disposed substantially between the open end and the closed end, the sidewall defining a first surface and a second surface, a first cavity formed by the first surface and the closed end when the storage and transportation system is disposed in a first position, a second cavity formed by the second surface and the closed end when the storage and transportation system is disposed in a second position, and an aperture defined by the open end, the storage and transportation system transitioning from the first position to the second position by the closed end and at least a portion of the inflatable article passing through the aperture, thereby forming the second cavity, the storage and transportation system transitioning from the second position to the first position by the closed end and at least a portion of the inflatable article passing through the aperture, thereby forming the first cavity.

[0004] In some implementations of the present disclosure, a method for reconfiguring a storage and transportation system is provided. The method includes providing an inflatable article, connecting a storage and transport apparatus to the inflatable article via a connector, the storage and transport apparatus including a closed end, an open end and a sidewall disposed substantially between the open end and the closed end, the sidewall defining a first surface and a second surface, the open end defining an aperture, defining a first cavity as being formed by the first surface and closed end when the storage and transportation system is disposed in a first position, defining a second cavity as being formed by the second surface and closed end when the storage and transportation system is disposed in a second position, and transitioning the storage and transportation system from the

first position to the second position by passing the closed end and at least a portion of the inflatable article through the aperture, thereby forming the second cavity, and transitioning the storage and transportation system from the second position to the first position by passing the closed end and at least a portion of the inflatable article through the aperture, thereby forming the first cavity.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] To understand the present disclosure, it will now be described by way of example, with reference to the accompanying drawings in which implementations of the disclosures are illustrated and, together with the descriptions below, serve to explain the principles of the disclosure.

[0006] FIG. 1A is a perspective view of a storage and transportation system according to exemplary implementations of the present disclosure.

[0007] FIG. 1B is a perspective view of a storage and transportation system according to exemplary implementations of the present disclosure.

[0008] FIG. 2 is a perspective view of a storage and transportation system, showing a substantially deflated inflatable article, according to exemplary implementations of the present disclosure.

[0009] FIG. 3 is a perspective view of the storage and transportation system of FIG. 2, showing the substantially deflated inflatable article in a folded state different from that shown in FIG. 2.

[0010] FIG. 4 is a perspective view of a storage and transportation system in a first position according to exemplary implementations of the present disclosure, showing a substantially deflated inflatable article in a folded state.

[0011] FIGS. 5 and 6 are perspective views of the storage and transportation system of FIG. 4, showing the substantially deflated inflatable article transitioning between the first position and a second position.

[0012] FIG. 7 is a perspective view of the storage and transportation system of FIG. 4, showing the storage and transportation system in a second position.

[0013] FIG. 8 is a perspective view of the storage and transportation system of FIG. 4, showing the storage and transportation system in a second position and showing an aperture reduced in size relative to the aperture shown in FIG. 7 and showing a constriction system including a drawstring.

[0014] FIG. 9 is a perspective view of a storage and transportation system according to exemplary implementations of the present disclosure, showing a constriction system including corresponding hook-and-loop panels.

[0015] FIG. 10 is a perspective view of a storage and transportation system according to exemplary implementations of the present disclosure, showing a constriction system including a zipper.

[0016] FIG. 11 is a perspective view of a storage and transportation system according to exemplary implementations of the present disclosure, showing a constriction system including side-release buckles.

[0017] FIG. 12 is a perspective view of a storage and transportation system according to exemplary implementations of the present disclosure, showing a constriction system including mechanical clasps.

[0018] FIG. 13 is a perspective view of a storage and transportation system according to exemplary implementa-

tions of the present disclosure, showing a constriction system including mutually attractive permanent magnets.

[0019] FIG. 14 is a perspective view of a storage and transportation system according to exemplary implementations of the present disclosure, showing a constriction system including tie strings.

DETAILED DESCRIPTION

[0020] While the integrated storage system discussed herein may be implemented in many different forms, the disclosure will show in the drawings, and will herein describe in detail, implementations with the understanding that the present description is to be considered as an exemplification of the principles of the sign stand and is not intended to limit the broad aspects of the disclosure to the implementations illustrated.

[0021] A storage and transportation system 10 is disclosed. Referring now to the figures, and initially to FIG. 1A, the storage and transportation system 10 includes an article 14. The article 14, which may be an inflatable article 18, is compressible between a plurality of volumes, orientations and/or arrangements. The inflatable article 18 may be formed from polyvinyl chloride (PVC), although other suitable polymers or materials may be used. The article 14 may also be made of a foam, polymer or other compressible material.

[0022] The inflatable article 18 assumes one form when filled with a fluid, another form when substantially devoid of the fluid and a transitional form when the inflatable article 18 is partially filled with the fluid. The inflatable article 18 includes an exterior surface 22 defining an interior cavity (not shown). The exterior surface 22 substantially retains the fluid within the inflatable article 18, enabling the inflatable article 18 to achieve and maintain an inflated state. FIGS. 1A and 1B show the inflatable article 18 in an inflated state.

[0023] A valve 26 is disposed on the exterior surface 22 and facilitates the inflation and/or deflation of the inflatable article 18 by allowing fluid to pass through the valve 26 in one or more directions. In this manner, fluid may pass from the interior cavity through the valve 26 to an exterior of the inflatable article 18 to deflate the inflatable article 18, and fluid may pass from the exterior of the inflatable article 18 through the valve 26 to the interior cavity to inflate the inflatable article 18. In some implementations, separate and dedicated valves are used for inflating and deflating the inflatable article 18.

[0024] In some implementations, the inflatable article 18 is an inflatable mattress 30. As shown in FIGS. 1A and 1B, the inflatable mattress 30 includes a mattress body 34 defining lateral sides 38, a connection end 46 and a distal end 50. Lateral wings 52 may be disposed on the lateral sides 38. Other inflatable elements, such as a distal protrusion or a connection protrusion, may be disposed on the distal end 50 and connection end 46, respectively. In some embodiments, a raised inflatable continuous barrier (not shown) is disposed on the lateral sides 38, connection end 46 and distal end 50. The valve 26 may be disposed on the connection end 46.

[0025] The storage and transportation system 10 includes a storage and transport apparatus 60. The storage and transport apparatus 60 is, in some implementations, a pouch 66 having a closed end 70 and an open end 74. The open end 74 defines an aperture 80. A sidewall 84 extends substantially between the closed end 70 and the open end 74, and the sidewall 84 may be substantially continuous. As exem-

plarily shown in FIG. 2, the sidewall 84 defines a first surface 88 and a second surface 92, the first and second surfaces 88, 92 bounded by the closed end 70 and the open end 74. The first and second surfaces 88, 92 may be disposed on substantially opposite sides of the sidewall 84. The pouch 66 comprises a substantially solid, opaque or water-tight material. In some implementations, the pouch 66 is formed from a mesh material 93, as best shown in FIG. 1B, allowing for the passage of fluid through the pouch 66.

[0026] One or more of the first surface and the second surface 88, 92 includes instructional indicia 96 in some implementations. The instructional indicia 96 may include markings, illustrations, instructions, colors, text and/or numerals for apprising a user of storage and transportation system 10 operations. Such operations will be described below in detail. The instructional indicia 96 is schematically represented by an "X" on the second surface 92 of FIG. 4, and the instructional indicia 96 is schematically represented by a "Y" on the first surface 88 of FIG. 7. Instructional indicia 96 disposed on the first surface 88 may be the same as, or different from, instructional indicia 96 disposed on the second surface 92.

[0027] A connector 100 is disposed between the storage and transport apparatus 60 and the article 14, inflatable article 18 and/or inflatable mattress 30. In some implementations, as shown in the figures, the connector 100 is connected to the connection end 46 and the closed end 70 and/or the second surface 92. The connector 100, in some implementations, permanently joins the transport apparatus 60 and the article 14 at the closed end 70 and the connection end 46, respectively. In other implementations, the connector 100 releasably joins the transport apparatus 60 and the article 14. In some implementations, the connector 100 is joined to the second surface 92.

[0028] FIG. 1B shows a pouch securement system 104. The pouch securement system 104, which may include a pocket 108, selectively houses and secures the storage and transport apparatus 60 when the article 14 is inflated or otherwise deployed, or when the storage and transportation system 10 is arranged in a first position, as will be described below.

[0029] FIGS. 1A-4 show the storage and transportation system 10 in a first, or deployed or use, position 120. A first cavity 124 is defined by the first surface 88, the closed end 70 and the open end 74 when the storage and transportation system 10 is arranged in the first position 120. In the first position 120, one or more of the article 14, inflatable article 18, inflatable mattress 30 and the connector 100, are not disposed within the first cavity 124. Instead, in the first position 120, the one or more of the article 14, inflatable article 18 and inflatable mattress 30 are disposed exterior to the first cavity 124 and may further be joined to the storage and transport apparatus 60 by the connector 100.

[0030] FIGS. 7-14 show the storage and transportation system 10 in a second, or storage or transportation, position 130. A second cavity 134 is defined by the second surface 92, the closed end 70 and the open end 74 when the storage and transportation system 10 is arranged in the second position 130. In the second position 130, one or more of the article 14, inflatable article 18, inflatable mattress 30 and the connector 100 are disposed within the second cavity 134, and may further be joined to the storage and transport apparatus 60 by the connector 100.

[0031] A carrying handle 140 is attached to the storage and transportation system 10. In some implementations, the carrying handle 140 is connected to the storage and transport apparatus 60. In some implementations, the carrying handle 140 is connected to the storage and transport apparatus 60 at, or proximate to, the open end 74. The carrying handle 140 enables a user to easily carry and transport the storage and transportation system 10.

[0032] A constriction, or closure, system 150 is included with the storage and transportation system 10 and facilitates a reduction in size of the aperture 80 when the storage and transportation system 10 is arranged in one or more of the first position 120 or the second position 130. Such a reduction in size, or even complete elimination, of the aperture 80 when the storage and transportation system 10 is arranged in the second position 130 secures one or more of the article 14, inflatable article 18, inflatable mattress 30 and the connector 100 within the second cavity 134. The constriction system 150 may utilize any number of mechanical fasteners or devices to reduce a size of the aperture 80. As shown in the figures, the constriction system 150 may be disposed on the storage and transport apparatus 60 and may further be disposed at, or near, the open end 74.

[0033] In some implementations, as shown in FIG. 8, the constriction system 150 includes a drawstring 152 with an actuator 154 to reduce a size of the aperture 80. The actuator 154 may be a biased actuator.

[0034] In some implementations, as shown in FIG. 9, the constriction system 150 includes corresponding hook-and-loop panels 162, 163 to reduce a size of the aperture 80.

[0035] In some implementations, as shown in FIG. 10, the constriction system 150 includes a zipper 166 to reduce a size of the aperture 80.

[0036] In some implementations, as shown in FIG. 11, the constriction system 150 includes one or more buckles 170 to reduce a size of the aperture 80. The buckles 170 may be side-release, top-release or bottom-release buckles.

[0037] In some implementations, as shown in FIG. 12, the constriction system 150 includes one or more mechanical clasps 174, 175 to reduce a size of the aperture 80. The mechanical clasps 174, 175 may be biased mechanical clasps.

[0038] In some implementations, as shown in FIG. 13, the constriction system 150 includes mutually-attractive permanent magnets 178, 180 to reduce a size of the aperture 80.

[0039] In some implementations, as shown in FIG. 14, the constriction system 150 includes tie strings 182, 184 to reduce a size of the aperture 80.

[0040] In operation, the storage and transportation system 10 can be arranged in the first position 120, the second position 130 or an intermediate position, as shown in FIGS. 5 and 6, while transitioning between the first and second positions 120, 130.

[0041] The storage and transportation system 10 is shown as being arranged in the first position 120 in FIGS. 1A-4. From an inflated state, as shown in FIGS. 1A and 1B, the article 14 is deflated or compressed to a less voluminous state, as shown in FIG. 2. Portions of the article 14, which may include lateral sides 38 and lateral wings 52, are folded laterally as shown in FIG. 3. The folded article 14 is then rolled, folded or compressed to a subsequent form, exemplarily shown in FIG. 4. It can be seen that in the first position 120, the first cavity 124 is formed and is devoid of

one or more of the article 14, inflatable article 18, inflatable mattress 30 and the connector 100.

[0042] The storage and transportation system 10 can transition from the first position 120 to the second position 130. One or more of the article 14, inflatable article 18, inflatable mattress 30 and the connector 100 passes through the aperture 80 of the open end 74 as the storage and transportation system 10 transitions from the first position 120 to the second position 130. Further, in some implementations, the closed end 70 passes through the aperture 80 of the open end 74 as the storage and transportation system 10 transitions from the first position 120 to the second position 130. In some implementations, as the storage and transportation system 10 transitions from the first position 120 to the second position 130 as sequentially shown in FIGS. 5 and 6, a size of the first cavity 124 decreases while the second cavity 134 increases in size or is formed. After one or more of the article 14, inflatable article 18, inflatable mattress 30, the connector 100 and the closed end 70 passes through the aperture 80, the storage and transportation system 10 is then arranged in the second position 130.

[0043] Following the transition from the first position 120 to the second position 130, the aperture 80 can be at least partially reduced in size to secure one or more of the article 14, inflatable article 18, inflatable mattress 30 and the connector 100 within the second cavity 134 using the above-mentioned constriction system 150.

[0044] Similarly, the storage and transportation system 10 can transition from the second position 130 to the first position 120. Starting from the second position 130 where one or more of the article 14, inflatable article 18, inflatable mattress 30 and the connector 100 are disposed within the second cavity 134, one or more of the article 14, inflatable article 18, inflatable mattress 30 and the connector 100 passes through the aperture 80 of the open end 74. Further, the closed end 70 may pass through the aperture 80 of the open end 74 as the storage and transportation system 10 transitions from the second position 130 to the first position 120. In some implementations, as the storage and transportation system 10 transitions from the second position 130 to the first position 120, a size of the second cavity 134 decreases while the first cavity 124 increases in size or is formed. The transition from the second position 130 to the first position 120 is substantially similar to, and the reverse of, the transition from the first position 120 to the second position 130.

[0045] While some implementations have been illustrated and described, numerous modifications come to mind without significantly departing from the spirit of the disclosure, and the scope of protection is only limited by the scope of the accompanying claims. Further, the present disclosure provides a sign base and a sign assembly having increased structural strength, improved aesthetic design, a footprint facilitating flexible sign base placement and a wheel arrangement allowing easy sign assembly transportation.

[0046] The disclosed systems and methods are well adapted to attain the ends and advantages mentioned as well as those that are inherent therein. The particular implementations disclosed above are illustrative only, as the teachings of the present disclosure may be modified and practiced in different but equivalent manners apparent to those skilled in the art having the benefit of the teachings herein. Furthermore, no limitations are intended to the details of construction or design herein shown, other than as described in the

claims below. It is therefore evident that the particular illustrative implementations disclosed above may be altered, combined, or modified and all such variations are considered within the scope of the present disclosure. The systems and methods illustratively disclosed herein may suitably be practiced in the absence of any element that is not specifically disclosed herein and/or any optional element disclosed herein. While compositions and methods are described in terms of “comprising,” “containing,” or “including” various components or steps, the compositions and methods can also “consist essentially of” or “consist of” the various components and steps. All numbers and ranges disclosed above may vary by some amount. Whenever a numerical range with a lower limit and an upper limit is disclosed, any number and any included range falling within the range is specifically disclosed. In particular, every range of values (of the form, “from about a to about b,” or, equivalently, “from approximately a to b,” or, equivalently, “from approximately a-b”) disclosed herein is to be understood to set forth every number and range encompassed within the broader range of values. Also, the terms in the claims have their plain, ordinary meaning unless otherwise explicitly and clearly defined by the patentee. Moreover, the indefinite articles “a” or “an,” as used in the claims, are defined herein to mean one or more than one of the element that it introduces. If there is any conflict in the usages of a word or term in this specification and one or more patent or other documents that may be incorporated herein by reference, the definitions that are consistent with this specification should be adopted.

[0047] As used herein, the phrase “at least one of” preceding a series of items, with the terms “and” or “or” to separate any of the items, modifies the list as a whole, rather than each article of the list (i.e., each item). The phrase “at least one of” allows a meaning that includes at least one of any one of the items, and/or at least one of any combination of the items, and/or at least one of each of the items. By way of example, the phrases “at least one of A, B, and C” or “at least one of A, B, or C” each refer to only A, only B, or only C; any combination of A, B, and C; and/or at least one of each of A, B, and C.

What is claimed is:

1. A storage and transportation system, comprising:
 - an inflatable article;
 - a storage and transport apparatus connected to the inflatable article via a connector, the storage and transport apparatus including a closed end, an open end and a sidewall disposed between the open end and the closed end, the sidewall defining a first surface and a second surface;
 - a first cavity formed by the first surface and the closed end when the storage and transportation system is disposed in a first position;
 - a second cavity formed by the second surface and the closed end when the storage and transportation system is disposed in a second position; and
 - an aperture defined by the open end, the storage and transportation system transitioning from the first position to the second position by the closed end and at least a portion of the inflatable article passing through the aperture, thereby forming the second cavity, the storage and transportation system transitioning from the second position to the first position by the closed end and at least a portion of the inflatable article passing through the aperture, thereby forming the first cavity.

2. The storage and transportation system of claim 1, wherein the connector and at least a portion of the inflatable article are disposed within the second cavity when the storage and transportation system is disposed in the second position.

3. The storage and transportation system of claim 1, wherein the first and second surfaces are disposed on opposite sides of the sidewall.

4. The storage and transportation system of claim 1, wherein the storage and transport apparatus includes a constriction system for reducing a size of the aperture when the storage and transportation system is disposed in at least one of the first position and the second position.

5. The storage and transportation system of claim 1, wherein the inflatable article is an inflatable mattress.

6. The storage and transportation system of claim 5, wherein the inflatable mattress includes one or more lateral wings, each lateral wing being disposed on a lateral side of the inflatable mattress.

7. The storage and transportation system of claim 1, wherein the connector permanently attaches the storage and transport apparatus to the inflatable article.

8. The storage and transportation system of claim 1, wherein the connector releasably attaches the storage and transport apparatus to the inflatable article.

9. The storage and transportation system of claim 1, wherein the storage and transport apparatus includes a carrying handle.

10. The storage and transportation system of claim 1, wherein at least one of the first surface and the second surface includes instructional indicia for apprising a user of storage and transportation system operations.

11. The storage and transportation system of claim 4, wherein the constriction system includes a drawstring and a biased mechanical actuator.

12. The storage and transportation system of claim 4, wherein the constriction system includes a zipper.

13. The storage and transportation system of claim 4, wherein the constriction system includes a hook panel and a corresponding loop panel.

14. The storage and transportation system of claim 4, wherein the constriction system includes a mechanical clasp.

15. The storage and transportation system of claim 4, wherein the constriction system includes a buckle.

16. The storage and transportation system of claim 4, wherein the constriction system includes mutually attractive permanent magnets.

17. The storage and transportation system of claim 4, wherein the constriction system includes one or more tie strings.

18. A method for reconfiguring a storage and transportation system, comprising:

- providing an inflatable article;

- connecting a storage and transport apparatus to the inflatable article via a connector, the storage and transport apparatus including a closed end, an open end and a sidewall disposed between the open end and the closed end, the sidewall defining a first surface and a second surface, the open end defining an aperture;

- defining a first cavity as being formed by the first surface and closed end when the storage and transportation system is disposed in a first position;

defining a second cavity as being formed by the second surface and closed end when the storage and transportation system is disposed in a second position; and transitioning the storage and transportation system from the first position to the second position by passing the closed end and at least a portion of the inflatable article through the aperture, thereby forming the second cavity, and transitioning the storage and transportation system from the second position to the first position by passing the closed end and at least a portion of the inflatable article through the aperture, thereby forming the first cavity.

19. The method of claim **18**, wherein the connector and at least a portion of the inflatable article are disposed within the second cavity when the storage and transportation system is disposed in the second position, and wherein the first and second surfaces are disposed on opposite sides of the sidewall.

20. The method of claim **18**, wherein the storage and transport apparatus includes a constriction system for reducing a size of the aperture when the storage and transportation system is disposed in at least one of the first position and the second position.

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