INFLATABLE MAILING PACKAGE

ABSTRACT

A scalable mailing package and a process for mailing an article are disclosed. In one embodiment, the scalable mailing package includes an enclosure having an open end and a compartment for receiving an article. The enclosure includes an exterior surface and an interior surface. The scalable mailing package further includes at least one inflatable bladder positioned adjacent to the interior surface of the enclosure, and a manual pumping device integrated into the compartment of the enclosure. The manual pumping device is in fluid communication with the at least one inflatable bladder. The scalable mailing package further includes a one way valve located between the pumping device and the at least one inflatable bladder that only allows gas flow from the pumping device to the at least one inflatable bladder, and a sealing member for sealing the open end of the enclosure.
INFLATABLE MAILING PACKAGE

RELATED APPLICATIONS


BACKGROUND

[0002] Many and various different breakable and/or perishable items are mailed in packages on a daily basis. Various efforts have been undertaken to protect the items during shipping. For instance, those skilled in the art have used corrugated boxes in combination with foam materials. For smaller items, the items are typically wrapped in a “bubble wrap” material and inserted into a box or envelope. The bubble wrap material is typically made from polymer films and is comprised of a network of small bubbles inflated with air. The inflated bubbles protect the items during shipping providing an air cushion around the item.

[0003] Some envelopes or other packages are manufactured such that inflated bubbles or bubble wrap material is integrated into the package. For instance, various envelopes are commercially available that have an interior lining made from inflated bubbles.

[0004] Although bubble wrap and the above describe packages have been found well suited to protecting items during shipping, the packages themselves are somewhat bulky which presents various problems to the manufacturer of the packages and/or to the supplier of the packages. For instance, since the packages are filled with air, shipping a plurality of empty packages together requires a significant amount of space. In addition, suppliers of the package typically need a significant amount of shelf space for storing the packages.

[0005] In view of the above, a need exists for an improved package capable of protecting items during shipping. In particular, a need exists for a package containing air bladders that takes up a minimal amount of space prior to use.

SUMMARY

[0006] In general, the present disclosure is directed to a mailing package that includes at least one inflatable bladder. Prior to use of the package, the bladder is in a deflated condition allowing for the package to be stored in a flat configuration. In accordance with the present disclosure, the package includes an integrated pumping device that then can be used to inflate the bladder after the package has been loaded with an item for protecting the items during shipping.

[0007] For instance, in one embodiment, the present disclosure is directed to a sealable mailing package comprising an enclosure having an open end and a compartment for receiving an article. The enclosure includes an exterior surface and an interior surface. At least one inflatable bladder is positioned adjacent to the interior surface of the enclosure. In accordance with the present disclosure, a manual pumping device is integrated into the compartment of the enclosure and is in fluid communication with the inflatable bladder. A one way valve is located between the pumping device and the inflatable bladder that only allows a gas such as air to flow from the pumping device to the inflatable bladder. The package further includes a sealing member for sealing the open end.

[0008] The design of the pumping device incorporated into the package can vary depending upon the particular application. In one embodiment, for instance, the pumping device may comprise a collapsible chamber that includes a vent for permitting airflow into the chamber after the chamber has been collapsed. By collapsing the chamber, such as by compressing the chamber, airflow is forced through the one way valve and into the inflatable bladder.

[0009] Thus, a user can press on the pumping device to collapse the chamber and cause air to inflate the bladder. Once pressure is removed from the chamber, air rushes into the chamber from the external vent. In one embodiment, a resilient member can be located in the chamber that causes the chamber to expand and fill with air after the chamber has been compressed. The resilient member may comprise, for instance, a foam material, such as an open cell foam. In other embodiments, the resilient member may comprise a spring.

[0010] In one embodiment, the package can be in the shape of an envelope and can include a first panel attached to a second panel. A plurality of interconnected bladders can be located along the interior surface of each of the panels. The pumping device can be in fluid communication with all of the inflatable bladders, or alternatively, the package may include multiple pumping devices. For instance, a first pumping device may be used to inflate the plurality of bladders located adjacent to the first panel and a second pumping device can be used to inflate a plurality of bladders located adjacent to the second panel.

[0011] As described above, the pumping device can include a chamber that is vented to the exterior environment. The vent, for instance, may extend from the chamber to the outside of the package forming an opening on an exterior surface of the package. Prior to use of the package, the vent opening can be covered and sealed by a covering device. For instance, the chamber of the pumping device can first be collapsed and the vent opening can be sealed so that the pumping device takes up little or no additional space prior to use of the package. Once the package is ready for use, the covering device can then be removed from the package to expose the vent opening in order to operate the pumping device. In one embodiment, for instance, the covering device may comprise an adhesive label that can be removed by a user. In another embodiment, the covering device may comprise a weakened area of the enclosure that can be punctured by a user for accessing the vent opening.

[0012] The inflatable package of the present disclosure can be shipped and sold to consumers in a deflated condition. When it is time to use the package, a consumer can then load an article in to the package while the package is still deflated. One or more vent openings can then be exposed for operating the pumping device for inflating the plurality of bladders contained within the package. Of particular advantage, the inflatable bladders, in one embodiment, will surround the article loaded in to the package during inflation. Once the package is inflated, the package can then be sealed and shipped.

[0013] Other features and aspects of the present disclosure are discussed in greater detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] A full and enabling disclosure of the present invention, including the best mode thereof to one skilled in the art, is set forth more particularly in the remainder of the specification, including reference to the accompanying figures, in which:
FIG. 1 is a perspective view of one embodiment of a package made in accordance with the present disclosure; FIG. 2 is a cross sectional view of the package illustrated in FIG. 1; and FIGS. 3A through 3C illustrate one embodiment of a pumping device that may be incorporated into a package made in accordance with the present disclosure.

Repeal use of reference characters in the present specification and drawings is intended to represent the same or analogous features or elements of the present invention.

DETAILED DESCRIPTION

It is to be understood by one of ordinary skill in the art that the present disclosure is a description of exemplary embodiments only; and is not intended as limiting the broader aspects of the present invention.

In general, the present disclosure is directed to a mailing package containing at least one inflatable bladder. In accordance with the present disclosure, the mailing package includes a pumping device that has been integrated into the package. The pumping device is in fluid communication with the at least one bladder for inflating the bladder during use of the package to ship one or more items.

Prior to use of the package, however, the bladder can remain in the deflated position so that the package takes up a minimum amount of space. In one embodiment, even the pumping device can be stored in a collapsed condition prior to use for further minimizing the size of the package. In this manner, the package is not only capable of protecting items during shipping by providing an air mattress around items contained in the package, but can be stored in a completely collapsed state so that the package does not become burdensome to ship and store prior to use.

Referring to FIG. 1, one embodiment of a package 10 made in accordance with the present disclosure is shown. In this embodiment, the package 10 includes a first panel 12 attached to or integral with a second panel 14. For instance, the first panel 12 can be attached to the second panel 14 along the side edges and along a bottom edge. Alternatively, the first and second panels 12 and 14 can be constructed from a single piece of material that has been folded along the bottom edge or along one of the side edges. When made from a single piece of material, the remaining edges can be attached together using any suitable technique.

In the embodiment illustrated, the package 10 is generally in the shape of a large envelope defining an interior space that is configured to receive one or more items or articles for shipping. It should be understood, however, that the package 10 can have any of a wide variety of shapes depending upon the particular application. For instance, in one embodiment, the package 10 may include side panels that increase the depth of the package. The side panels, for instance, may be straight or fluted.

In order to close the package 10 for shipping, the package includes a sealing member 16 that, in this embodiment, comprises a flap that can be folded over onto the first panel 12. The sealing member 16 can include any suitable adhesive element 18 for securely attaching the sealing member 16 to the first panel 12. The adhesive element 18, for instance, may comprise a pressure sensitive adhesive, double-sided tape, or an adhesive that becomes active when wetted. In the embodiment illustrated in FIG. 1, the adhesive element 18 is covered by a release liner 20 that protects the adhesive element prior to use. The release liner 20 is designed to be removed and discarded thereby exposing the adhesive element 18 for attachment to the first panel 12.

The first panel 12 and the second panel 14 can be made from any suitable material. For instance, the panels can be made from polymer films, a paper, other nonwoven materials, woven materials, knitted materials, foils, or the like. In one embodiment, the package 10 can be made from a nonwoven web formed from synthetic fibers, such as olefin fibers. For example, in one embodiment, the package 10 can be made from a DuPont and are made from flash spun high density polyethylene fibers. The materials comprise spunbond webs. In other embodiments, however, meltblown webs may also be used.

In accordance with the present disclosure, the package 10 further includes at least one inflatable bladder in combination with a pumping device. In the embodiment illustrated in FIG. 1, for instance, the interior surface of the package 10 is lined with a plurality of interconnected inflatable bladders 22. As shown, the bladders 22 are interconnected by a network of conduits. The interconnected bladders are positioned adjacent to the interior surface of the first panel 12 and adjacent to the interior surface of the second panel 14.

In accordance with the present disclosure, the package 10 is initially manufactured such that the bladders 22 are in a deflated condition. In order to inflate the bladders 22, at least one pumping device can be incorporated into the package 10. For example, in the embodiments illustrated in FIGS. 1 and 2, the package 10 includes a first pumping device 24 and a second pumping device 26. Both pumping devices 24 and 26 can be in fluid communication with all of the bladders 22. Alternatively, the pumping devices 24 and 26 can be configured to inflate different sections of the interconnected bladders. For example, in one embodiment, the first pumping device 24 may be configured to inflate the bladders positioned adjacent to the first panel 12, while the second pumping device 26 can be configured to inflate the interconnected bladders adjacent the second panel 14.

Referring to FIGS. 3A through 3C, the pumping device 24 is shown in greater detail. In accordance with the present disclosure, the pumping device 24 can be initially incorporated into the package 10 in a collapsed or deflated condition. When the package 10 is used to ship an article, the pumping device can be configured to assume an expanded condition for injecting a gas, such as air, into the inflatable bladders.

For instance, as shown in FIG. 3A, the pumping device 24, in one embodiment, includes a resilient member 28 contained in a vented chamber 30. As shown, the chamber 30 includes a vent opening 32 that is covered by a covering device 34. The pumping device 24 is also in communication with a one-way valve 36.

In FIGS. 3A through 3C, the pumping device 24 is illustrated in an isolated condition. The pumping device 24 can be incorporated into the package 10 using any suitable technique. In one embodiment, as shown in FIG. 1, the pumping device 24 may be placed in one of the corners of the package. When incorporated into the package as shown in FIG. 1, the first panel 12 is positioned in between the covering device 34 and the vent opening 32. In addition, the first panel 12 will define an opening that corresponds with the vent opening so that air can enter the chamber 30 from the outside environment. As shown in FIG. 1, in this embodiment, the covering device 34 is positioned over the first panel 12.
In FIG. 3A, as described above, the pumping device 24 is generally shown in a collapsed condition. In this regard, the chamber 30 is made from a flexible material that will allow the pumping device to expand and contract. The one-way valve 36 allows a fluid, such as air, to exit the pumping device but does not allow air to enter the pumping device. Thus, when the covering device 34 covers the vent opening 32, a substantially fluid tight seal is formed with respect to the chamber 30. During production, the pumping device 24 is compressed into a contracted condition and the covering device 34 is then placed over the vent opening 32. In this manner, the pumping device 24 remains in a collapsed state.

The one-way valve 36 may comprise any suitable device capable of only allowing air flow in one direction. In the embodiment illustrated, for instance, the one-way valve comprises a pair of overlapping flaps. The flaps can be made from any suitable flexible material, such as a rubber material or plastic material. In alternative embodiments, the one-way valve 36 may comprise a single flap that only opens in a single direction, may comprise a membrane containing a slit for allowing gas flow, or may comprise any other suitable configuration.

The resilient member 28, on the other hand, comprises any suitable device capable of expanding and contracting when compressed and then released. In one embodiment, for instance, the resilient member may comprise a foam material, such as an open cell foam. Alternatively, the resilient member may comprise one or more springs.

As shown in FIG. 3B, in order to inflate the inflatable bladders 22 as shown in FIG. 1, the covering device 34 is first removed in order to expose the vent opening 32. Exposing the vent opening 32 allows air to enter the chamber 30 causing the resilient member 28 to expand. The covering device 34 can comprise any suitable device capable of removably covering the vent opening 32. The covering device 34, for instance, may comprise a peelable label. Alternatively, the covering device 34 may comprise a weakened portion on the package that can be punctured for allowing access to the vent opening.

In the embodiments shown in FIGS. 3A through 3C, the chamber 30 includes a single vent opening 32. It should be understood, however, that the chamber may contain multiple vent openings as desired.

Once the pumping device 24 assumes an expanded configuration as shown in FIG. 3B, a user can then cover the vent opening 32 and compress the pumping device causing air to flow through the one-way valve 36 and into the plurality of bladders 32. In one embodiment, for instance, a user can put his or her hand or fingers over the vent opening for compressing the pumping device and inflating the interconnected bladders. Once the pumping device 24 has been compressed, a user can then remove his or her hand or fingers from the vent opening thereby allowing the chamber of the pumping device to expand. The motion of compressing the pumping device can then be repeated as desired until all of the interconnected bladders have been inflated to a desired pressure.

In the embodiments illustrated in FIGS. 1 and 2, the inflatable bladders 22 appear as rectangular squares. It should be understood, however, that the bladders can have any suitable shape and can have any suitable size. The size or pattern of the bladders, for instance, can be modified depending upon the type of article being shipped.

In one embodiment, for instance, the package 10 can be constructed so as to contain only a few inflatable bladders that have much larger dimensions. In one embodiment, for instance, the package may only contain a single inflatable bladder positioned on opposite sides of the interior of the package.

In another embodiment, the bladders 22 can have different sizes depending upon the particular application. For instance, in one embodiment, the package can have relatively larger sized bladders along the edges and smaller bladders within the center of the package. In still another embodiment, the bladders appearing adjacent to the first panel 12 can have a different size than the bladders positioned adjacent to the second panel 14. In still another embodiment, the bladders can have a shape that corresponds to the shape of an article or item to be placed in the package. For instance, relatively small bladders can form a pattern inside the package that corresponds to the shape of an article to be shipped. Larger bladders can then surround the smaller bladders so that the article does not move during shipment.

When using the package, in one embodiment, the article or item to be shipped is first placed within the interior space of the package. Once the article is loaded in the package, the covering device can be removed from the pumping device for inflating the inflatable bladders. Loading the article into the package prior to inflating the bladders can, in some embodiments, cause the bladders to surround the article when inflated. Once the bladders are inflated, the package can be sealed and shipped.

In one embodiment, the bladders can have sizes and shapes that fix any articles contained in the package into position when the bladders are inflated. Many prior envelopes containing bubble wrap, for instance, allow the items or articles to move within the package freely during shipment. The package of the present disclosure, however, can be configured such that the bladders surround the article or item loaded into the package and prevent the article or item from moving during shipment. In this manner, the article or item is better protected.

These and other modifications and variations to the present invention may be practiced by those of ordinary skill in the art, without departing from the spirit and scope of the present invention, which is more particularly set forth in the appended claims. In addition, it should be understood that aspects of the various embodiments may be interchanged both in whole or in part. Furthermore, those of ordinary skill in the art will appreciate that the foregoing description is by way of example only, and is not intended to limit the invention so further described in such appended claims.

What is claimed is:

1. A sealable mailing package comprising:
an enclosure having an open end and a compartment for receiving an article, the enclosure including an exterior surface and an interior surface;
at least one inflatable bladder positioned adjacent to the interior surface of the enclosure;
a manual pumping device integrated into the compartment of the enclosure, the manual pumping device being in fluid communication with the at least one inflatable bladder;
a one way valve located between the pumping device and the at least one inflatable bladder that only allows gas flow from the pumping device to the at least one inflatable bladder; and

a sealing member for sealing the open end of the enclosure.
2. A sealable mailing package as defined in claim 1, wherein the manual pumping device comprises a collapsible chamber, the collapsible chamber including a vent that permits airflow into the chamber after the chamber has been collapsed, whereby collapsing the chamber, airflow is forced through the one way valve and into the inflatable bladder.

3. A sealable mailing package as defined in claim 2, wherein the collapsible chamber contains a resilient member that expands the chamber after the chamber has been collapsed.

4. A sealable mailing package as defined in claim 3, wherein the resilient member comprises a foam material.

5. A sealable mailing package as defined in claim 3, wherein the resilient member comprises a spring.

6. A sealable mailing package as defined in claim 4, wherein the foam materials substantially fills the chamber.

7. A sealable mailing package as defined in claim 1, wherein the package includes a plurality of interconnected inflatable bladders.

8. A sealable mailing package as defined in claim 3, wherein the package includes a plurality of interconnected inflatable bladders.

9. A sealable mailing package as defined in claim 7, wherein the enclosure includes a first panel opposite a second panel and wherein the plurality of interconnected bladders are positioned adjacent the first panel on the interior surface and a plurality of interconnected bladders are also positioned adjacent the second panel on the interior surface.

10. A sealable mailing package as defined in claim 9, wherein the pumping device is in fluid communication with the plurality of interconnected bladders adjacent the first panel and wherein the package includes a second manual pumping device integrated into the compartment of the enclosure, the second pumping device being in fluid communication with the plurality of interconnected bladders positioned adjacent the second panel.

11. A sealable mailing package as defined in claim 2, wherein the vent that is included in the collapsible chamber extends from the chamber and through the enclosure defining a vent opening on the exterior surface of the enclosure.

12. A sealable mailing package as defined in claim 11, further comprising a covering device located on the exterior surface of the enclosure over the vent opening, the covering device preventing air from flowing through the vent opening and into the collapsible container once the container has been collapsed, the covering device being removable.

13. A sealable mailing package as defined in claim 11, wherein the covering device comprises an adhesive label.

14. A sealable mailing package as defined in claim 12, wherein the covering device comprises a weakened portion on the enclosure, the weakened portion being configured to be punctured by a user for opening the vent.

15. A sealable mailing package comprising: an enclosure having an open end and a compartment for receiving an article, the enclosure including an exterior surface and an interior surface; a plurality of inflatable bladders covering a substantial portion of the interior surface of the enclosure; a manual pumping device integrated into the compartment and in fluid communication with at least certain of the inflatable bladders, the pumping device comprising a collapsible chamber containing a resilient member wherein compressing the collapsible chamber causes air to flow into the inflatable bladders, the resilient member causing the chamber to expand back into an uncollapsed state after the chamber has been compressed; a one way valve located between the pumping device and the inflatable bladders that is configured to only allow fluid flow from the pumping device to the bladders; and a sealing member for sealing the open end.

16. A sealable mailing package as defined in claim 15, wherein the resilient member comprises a foam material.

17. A sealable mailing package as defined in claim 16, wherein the collapsible chamber includes a vent that permits airflow into the chamber after the chamber has been collapsed, wherein the vent that is included in the collapsible chamber extends from the chamber and through the enclosure defining a vent opening on the exterior surface of the enclosure.

18. A sealable mailing package as defined in claim 17, further comprising a covering device located on the exterior surface of the enclosure over the vent opening, the covering device preventing air from flowing through the vent opening and into the collapsible container once the container has been collapsed, the covering device being.

19. A process for mailing an article: placing an article into a compartment of a sealable mailing package through an open end of the package, the sealable mailing package including an exterior surface and an interior surface, the mailing package including a plurality of deflated bladders positioned adjacent to the interior surface, the sealable mailing package further including a manual pumping device integrated into the interior compartment of the enclosure, the manual pumping device being in fluid communication with the inflatable bladders; manually pumping the pumping device causing the bladders to inflate around the article; and sealing the open end of the mailing package for shipping.

20. A process as defined in claim 19, wherein the pumping device comprises a collapsible chamber containing a resilient member, the collapsible chamber further including a vent between the chamber and the exterior of the package, the vent being initially covered by a covering device and the chamber being in a collapsed state prior to inserting the article into the package and wherein the process further includes the step of removing the covering device causing the chamber of the pumping device to expand with air.