A packaging system consisting of a sheet, capable of being sealed around food or other contents to form a bag or package containing the contents. The sheet and resulting package has an integral handle fastened across the top side that allows for the horizontal storage and transport of food products and other goods. The package optionally has perforations and/or pockets for the insertion and removal of contents.
ENVIRO PROTO-PACKAGE

CROSS REFERENCES

[0001] U.S. Patent Documents


FIELD OF THE INVENTION

[0003] The present invention relates to a transportable packaging system for products that are best carried in a horizontal position and that require spaced, insulated stacking. It is useful in the food industry as packaging for pizza, heated fast-food items, cold food items such as salads and deli products, and bakery goods. This packaging system has additional uses outside the food industry, for example as light-weight, cost-effective packaging for crushable arts and crafts, floral wreaths, toys, and any other products that are best stored and transported in a horizontal position and that need to be stacked apart without crushing. This invention is potentially reusable, and thus environmentally friendly.

[0004] The invention is produced as a flat sheet, optimally stored in rolls. The package is created by wrapping the contents with the invention, and sealing the open end with shrink-wrap techniques, with adhesive, or via other means. The package thus created has perforations for opening for removal of contents, and for re-insertion and reuse.

BACKGROUND OF THE INVENTION

[0005] Consumer packaging has customarily taken the form of paper wraps or fold-up paper bags, which vary in thickness, density, color, size, and other features, but all of which have been produced at significant cost to the environment in terms of the raw materials required to make paper packaging. In the past several decades, plastic packaging has largely taken the place of paper wraps and bags in consumer markets.

[0006] Paper and plastic packaging for consumers have had significant drawbacks. First, these types of packaging are top-loaded and, if handles are provided, said handles are positioned in such a manner that the package must be carried vertically instead of horizontally. While goods requiring horizontal transport can be placed on the bottom of a top-loaded bag and then carried vertically, this system is not satisfactory for the following reasons. For goods that are larger in horizontal size than the bottom of the vertical packaging, the items could be crushed when the bag sides press inwards during transport. Also, the placement of such an item into a vertical bag, as well as later extrication, is difficult. Even if goods that need to be carried horizontally could fit into the bottom of a vertical bag, they would not be secure and could tip over when separated from the consumer’s controlling grasp by the length of the bag. If the packaging lacks handles, then the consumer will usually find transport even more difficult, often requiring two hands or a carrying position that crushes the package and its contents between arm and body.

[0007] Second, existing paper and plastic packaging for consumers often requires some labor to prepare the packaging for use, which increases the cost of the packaging for the merchant. Boxes require folding, trays need to be pre-assembled, and bags need to be attached to dispensers.

[0008] Finally, packaging generally has no further use to the consumer after the goods are transported to the intended destination. It is simply thrown away, adding to our society’s already overflowing trash problem.

[0009] There is a need for a packaging system that allows for easy horizontal transport of consumer goods, insulation during storage or transport, minimal storage space for the merchant, and minimal labor for set up and use. There is also a need for a packaging system that is cheaply manufactured, simply and easily assembled, and that is environmentally friendly.

DESCRIPTION OF RELATED ART (INCLUDING INFORMATION DISCLOSED UNDER 37 C.F.R. 1.97 AND 37 C.F.R. 1.98)

[0010] A search of the prior art did not disclose any patents that read directly on the claims of the instant invention. However, the following U.S. patents are considered relevant:


[0012] 2. The U.S. Pat. No. 5,882,118 Daniels Patent discloses a gusseted T-shirt type plastic bag and method of making such bag with a promotional strip extending along one side edge and secured at the top and bottom edges of the bag.


[0016] 6. The U.S. Pat. No. 4,241,863 Faller Patent discloses a paperboard container with two open-top trays hinged together, each covered by a film to secure the food within. The entire container may be placed in a cover sleeve.


[0020] For background purposes and as indicative of the art to which the invention is related reference may be made to the other cited patents.

BRIEF SUMMARY OF THE INVENTION

[0021] The present invention consists of a transportable packaging system by which food and other products can be
stored and transported in a horizontal position. The packaging system is comprised of a sealable sheet that is formed into a package directly around the contents. The resulting package has an integral exterior handle for horizontal transport. It is designed to be carried by one hand, while maintaining horizontal configuration during transport. It can be produced cheaply, in rolls, for transport and later dispensing and use.

[0022] Although the invention is described with respect to horizontal transport, it will become evident that the invention can be applied to objects in virtually any configuration with respect to the ground—horizontal, vertical, or any angle in between. As long as the objects can be substantially covered by the sheet, and as long as they can be held in the desired configuration during the sealing process, they can be transported while remaining in the desired configuration. Provided the object is not too large to be covered by the sheet, or too heavy to be supported by the resulting package, they can be packaged and carried. A tray is often desirable to support the items during packaging, but is not a critical element of the system.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0023] The invention will now be described, by way of example only, with reference to the accompanying drawings, as follows:

[0024] FIG. 1. View of a roll of the present invention, with 3 sheets unrolled.

[0025] FIG. 2. Top view of a preferred embodiment of the present invention, with cross straps running between opposing corners of a square sheet.

[0026] FIG. 3. Top view of an alternate embodiment of the present invention, with cross straps running between opposing sides of the square sheet.

[0027] FIG. 4. Top view of an alternate embodiment of the present invention, with cross straps running between opposing sides of an octagonal sheet.

[0028] FIG. 5. Top view of an alternate embodiment of the present invention, with a single strap running between opposing sides of the octagonal sheet.

[0029] FIG. 6. Top view of an alternate embodiment of the present invention, with crossed straps configuration handle.

[0030] FIG. 7. Top view of an alternate embodiment of the present invention, with cross straps running between opposing sides of a rectangular sheet.

[0031] FIG. 8. Perspective side view of an alternate embodiment of the present invention, with cross straps running between opposing sides of an octagonal sheet.

[0032] FIG. 9. Side plan view of the present invention, displaying cross straps.

[0033] FIG. 10. Magnified side plan view of the present invention, displaying cross straps.

[0034] FIG. 11. Bottom plan view of a square embodiment of the present invention, showing edges of the sheet after shrink wrap sealing.

[0035] FIG. 12. Bottom plan view of a circular embodiment of the present invention, showing edges of the sheet after shrink wrap sealing.

[0036] FIG. 13. Bottom plan view of a square embodiment of the present invention, showing adhesive strips for sealing.

[0037] FIG. 14. Perspective exploded view of the present invention, showing the application of the sheet containing the cross strap handle over a pizza and tray, during the process of making a package.

[0038] FIG. 15. Perspective view of the present invention, showing the one-handed carrying method using the cross strap handle of the present invention.

**DETAILED DESCRIPTION OF THE INVENTION**

[0039] Detailed descriptions of the preferred embodiment are provided herein. It is to be understood, however, that the present invention may be embodied in various forms. Therefore, specific details disclosed herein are not to be interpreted as limiting, but rather as a basis for the claims and as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure or manner.

[0040] The present invention consists of a transportable packaging system by which food and other products can be stored and transported in a horizontal position. The packaging system is comprised of a sealable sheet that is formed into a package directly around the contents. The resulting package has an integral exterior handle for horizontal transport. It is designed to be carried by one hand, while maintaining horizontal configuration during transport.

[0041] The sheet (and resulting package) is made of a flexible material, such as low or high-density polyethylene, thermoplastic, fabric, nylon, paper or laminated paper, or the like, that may be microwaveable. The preferred shape of the sheet is a square/rectangle/or octagonal with sides in the preferable range from 5 to 36 inches, although it may also be circular, made with rounded edges, or otherwise. Depending on the material and the density of the material, the sheet is transparent, translucent, or opaque. It may be composed of one layer or of a multitude of layers of material. It is capable of being formed into a closed package formed by folding, heat-sealing, side welds, or other means. The sheet optionally has ventilation slits, valves, or holes, and it can also be printed with logos, names, coupons, or other advertising as desired.

[0042] The sheet additionally has a handle that crosses the large upper exterior side of the resulting package. This handle can be in the shape of a large X, with two crossing arms extending to opposite sides of the package. Alternatively, the handle may extend as a single line across the side of the package, from the center of one edge to the center of the opposite edge. Optionally, at least one external pocket can be added, or one or more perforations present in the sheet, for creating pockets and openings in the resulting package.

[0043] A product, such as a food item on a tray, is placed underneath the sheet while held in a horizontal position. The sheet is wrapped around the sides and bottom of the product, and the open edges sealed. The sealing can be effected by shrink-wrapping, by adhesive, or by any sealing means available, resulting in a sealed package containing the product.
The entire package can then be transported or stacked on top of another package while keeping it in the same horizontal position. The package is thin-walled and will not interfere with stacking. At the same time, the package may serve as an insulator, forming a hot vapor thermal barrier for contents that are heated, and will protect the contents from contamination, and also can establish a barrier to keep cool contents cool.

One of the primary improvements made by this invention is the actual formation of the package around a product. This allows a product to be surrounded and contained while being kept in a horizontal position, thereby avoiding the difficulties of inserting a horizontally held product into a top-loading, vertically oriented package. The position and strength of the handle allows a product to be carried in a horizontal position easily with one hand, avoiding the problem of displacing, crushing, breaking, spilling, or otherwise adversely affecting the product during transport, as often happens if it is carried in a vertically oriented package.

The optional addition of ventilation slits, valves, or holes in the sheet or package allows excess moisture to be released. The package may be transparent, or nearly transparent, so the consumer can easily see into the package without having to open the packaging to check the contents. This function has the advantage of allowing the consumer to make certain that the contents are all that the consumer expects to purchase without having to open the sealed packaging and risk airborne or other contaminants affecting the contents.

This invention is also cost-efficient in terms of raw materials, sheet production, storage of packaging, and assembly labor. There is minimal movement of product required, as a product is simply held while the package is formed around it. If desired, a merchant can add items into the optional external pocket, such as coupons, condiments, utensils, napkins, advertising leaflets, and the like, obviating the need for an additional bag for such extra items. The packages lie flat and are of thin material, allowing many to be stacked, boxed, or rolled within a small area. The package is comprised of raw materials that are available and inexpensive and that can be molded and formed cheaply and quickly. The discarded packaging may be recyclable.

The invention is also capable of being reused by the consumer. The sheet is made of materials that are heat and cold tolerant and FDA approved, and the perforations on the sheet can create a bag for storage of left-overs used to store food collectively or individually. This feature enhances the economic value and utility of this invention by offering space-saving storage and eliminating the need for the consumer to use additional storage bags, pans, bins, containers and so forth. As such, the packaging is friendly to the environment because it can be recycled into various uses by the consumer.

Also, the sheet may be made of biodegradable film. Such films are known in the art, and are described in an article entitled, “Edible and Biodegradable Polymer Films: Challenges and Opportunities”, by principal authors John M. Krochta and Catherine De Mulier-Johnston, in the February 1997 issue of the periodical FOOD TECHNOLOGY, a copy of which is herein incorporated by reference. Said biodegradability of the sheet will enhance the packaging’s adaptability to the environment.

The drawing of FIG. 1 represents an overview of the present invention, which is constructed preferably of a sheet of recyclable polyethylene plastic 1 and lies flat when separated from a roll of edgewise connected sheets. The sheets are attached edgewise at perforation 2, allowing for the present invention to be mass-produced and interconnected for storage, while easily separated for dispensing, much like paper towels or plastic trash bags on a roll. The polyethylene plastic 1 is very thin and inexpensive making it much more cost effective than cardboard boxes, common in the prior art.

The sheet of the present invention, which itself is a proto package, is applied to the top of the contents desired to be packaged and transported. It is then wrapped around the contents, and sealed at the bottom. Often a rigid or semirigid tray is used to support the contents, and is included in the package after sealing. The tray allows for faster sealing, and offers rigidity and resistance to folding of the resulting package. The tray is composed of cardboard (perhaps waxed), fiberboard, paperboard, foil, plastic, or biodegradable material.

The cross-straps 3, which are centered on the flat surface of each sheet, and created of the same polyethylene plastic, allow for the consumer or merchant to transport food (pizza, pie, cake, etc.) with just one hand instead of two. Cross straps are secured at their ends 4, by adhesive, or other means. The sides of the present invention are designed to be folded under the contents and sealed on the bottom, preferably by adhesive strips or shrink-wrapping, to enclose the food. The cross-straps 3, combined with an optional tray as described above, provide a lightweight, easy to carry packaging that allows transporting with just a single hand.

Shrink wrapping is well known in the art. Machines for shrink wrapping virtually any type of article are marketed by, among other sources, Complete Packaging, 2025 Meridian Street, Atlanta, Tex. 76011 U.S.A.

Demonstrated in FIG. 1 is an interior perforation 6. In multilayer sheets, this perforation when opened creates a pocket for separate storage of condiments, napkins etc. This perforation in single layered sheets when opened, allows the package to be folded into a bag for storage of leftovers. The bag can be sealed by use of optional adhesive strips.

Also seen in FIG. 1 is the side perforation 5. This perforation allows easy opening of the package to remove package contents.

FIG. 2 is simply a magnified view of a single sheet from the roll of FIG. 1. All the features of the individual sheet seen in the previous figure are also shown in this view.

As shown in FIG. 2, the preferred embodiment of the present invention has cross straps that extend from one corner to the opposite corner of a square sheet. This results in the straps crossing at the midpoint of the sheet. This is highly desirable for balanced carrying of the resulting package using one hand only.

FIG. 3 displays an alternate embodiment of the present invention, still as a square sheet, but with cross straps that extend from the midpoint of each side to the midpoint of the opposing side, just short of the edge in each case. It is important to arrange the straps to cross approxi-
mately perpendicularly over the center of the sheet, for balanced transport, as described above.

[0059] FIGS. 4-10 show alternate embodiments of the present invention. FIG. 4 displays an octagonal sheet, with cross straps that extend from the midpoint of each side to the midpoint of the opposing side, as in the sheet of FIG. 3. As shown here, the side perforation 5 for removing contents actually extends along 3 sides, near the edge. The internal perforation 6 is in the shape of an octagon.

[0060] FIG. 5 illustrates yet another alternate embodiment of the present invention. This sheet is also in the shape of an octagon, as in FIG. 4. However, this has a single strap handle 4. This embodiment is not as desirable in many circumstances as the sheet with a cross-strap handle, as stable one-handed carrying is more difficult.

[0061] A circular embodiment of the present invention is seen in FIG. 6. Again, the cross-straps 3 are optimally arranged perpendicularly, as in the letter X. The straps again cross each other over the center of the sheet. The edge perforation 5 takes the form of a semi-circle, and the interior perforation 6 is circular. This embodiment is often used with a circular base tray, for instance with pizza.

[0062] FIG. 7 illustrates yet another alternate embodiment of the present invention. This sheet is in the shape of a rectangle. The cross arms 16 are of unequal length, and extend between the centers of opposing sides. The edge perforation 5 used for contents removal is located along a long side of the sheet.

[0063] FIG. 8 displays a perspective view of an octagonal embodiment of the present invention. Sheet 1, cross strap handle 3, strap end attachments 4, and perforations 5 and 6 are all shown. This would often be used with an octagonal base tray.

[0064] FIG. 9 shows a side plan view of the present invention. Sheet 1 is seen underneath cross straps 3. A tray could be placed underneath sheet 1 at this point, said tray containing the desired package contents. The assembly would then be ready for sealing into a package.

[0065] A magnified view of the package resulting from sealing is shown in FIG. 10. This figure represents a side view of the present invention, almost as it would appear in transit from one location to another. The polyethylene plastic sheet 1 surrounds the frozen or fresh pizza/pie/cake and is sealed with either tape or shrink-wrap. The centered cross-straps 3 are designed to evenly distribute the weight of the food across the circumference of the present invention allowing for effortless balance and ease of transporting. The cross-straps 3 are designed for single-handed transporting, thus freeing the other hand for more important tasks.

[0066] FIG. 11 is a view of the underside of a square sheet and square tray 8, after the sheet has been shrink-wrapped over the tray and contents (contents not shown). The edges 11 of the sheet are visible. On the opposite side, thus not visible in this view, are the cross straps forming the handle of the package.

[0067] FIG. 12 is a similar view of the underside of a circular sheet and circular tray 13, after the sheet has been shrink-wrapped over the tray and contents (contents not shown). The edges 11 of the sheet are visible. Again, on the opposite side, thus not visible in this view, are the cross straps forming the handle of the package.

[0068] FIG. 13 presents a view of the underside of a square sheet and square tray 8 after the sheet has been wrapped over the tray and contents and sealed via adhesive (contents not shown). The edges 10 of the sheet are visible. On the opposite side, thus not visible in this view, are the cross straps forming the handle of the package. The adhesive strips are indicated, although normally these would be underneath portions of the sheet, and thus not visible.

[0069] FIG. 14 shows a view during the process of preparing a package of the current invention. The sheet, with attached handle of cross arms 3, is placed over the contents 24, in this case a pie. The sheet also drapes over a tray 28, which may be used but is not essential. As the arrows indicate, the edges of the sheet will be drawn below the tray, and sealed to make a finished package, complete with handle.

[0070] FIG. 15 represents a side view of a finished package of the present invention, showing exactly how a merchant or consumer would utilize the cross-straps 3 to transport any food items with just one hand 6. Note how the hand 6 grasps the cross-straps 3, which balance the contents of the present invention across the polyethylene plastic base 1, thus ensuring horizontal transportation. The present invention requires just a single hand 6, freeing up the other hand to open or unlock doors, carry other items, or do more important tasks.

[0071] While the present invention has been described in terms of several preferred embodiments, it is not intended to limit the invention to the particular forms set forth. On the contrary, the present invention is intended to cover such alternatives, alterations, modifications, and equivalent structures and devices as may be included within the spirit and scope of the invention as defined within the appended claims.

We claim:

1. A transportable proto-packaging system for the horizontal storage and transport of food and other products, comprising:

   a. a sheet that is capable of being formed into a stable 3-dimensional structure;

   b. said sheet comprised of one or a plurality of attached parallel layers; and,

   c. said sheet comprising a handle that is attached to one face of the sheet such that the sheet can be carried in a substantially horizontal configuration with one hand holding said handle.

2. A transportable packaging system for the horizontal storage and transport of food and other products, formed by converting the sheet of claim 1 into a bag or package by following the steps of:

   a. placing said sheet on top of the desired contents, with handle facing up, and thus away from the contents;

   b. pulling the edges of the sheet down around the bottom of the contents; and,

   c. sealing said edges onto, or underneath, the bottom of the contents to form a package capable of holding said contents.
3. The package of claim 2 wherein the contents are held on a tray, and the sheet is sealed underneath said tray.

4. The package of claim 2 wherein said handle comprises two crossing straps in the form of an “X”, with arms extending approximately from the center of the top side, and ending at opposite sides of the sheet.

5. The package of claim 2 wherein said handle in the form of an “X” has one covered area between adjacent arms of the “X” such that an exterior pocket for the package is formed.

6. The proto-packaging system of claim 1 wherein said sheet is comprised of the material selected from the group consisting of plastic, thermoplastic, high-density polyethylene, low-density polyethylene, nylon, fabric, paper, and laminated paper.

7. The proto-packaging system of claim 1 wherein the sheet is comprised of at least one layer of approximately 0.005 to 4.0 millimeters in thickness.

8. The package of claim 2 wherein said sheet comprises a square or rectangular surface of area approximately 6x6 inches to 25x25 inches.

9. The package of claim 2 wherein said sheet comprises a circular surface of area approximately 4 inch diameter to 25 inch diameter.

10. The package of claim 2 wherein said package is capable of supporting contents weighing from about 1 oz to at least 12 pounds.

11. The package of claim 2 wherein the sheet is comprised of material that is microwaveable.

12. The package of claim 2 wherein the sheet is comprised of FDA-approved materials for safe storage of food.

13. The package of claim 2 wherein the sheet has one or more openings for ventilation.

14. The package of claim 2 wherein a handle is formed by punching two or more holes in the top layer of the package, thereby allowing the package to be carried and transported while in a horizontal configuration.

15. The package of claim 2 wherein the sheet is comprised of biodegradable film.

16. The package of claim 2 wherein the sheet further comprises an exterior pocket.

17. A process for converting the sheet of claim 1 into a package by following the steps of:

   1) placing said sheet on top of the desired contents, with handle facing up, and thus away from the contents;
   2) pulling the edges of the sheet down around the sides and bottom of the contents; and,
   3) sealing said edges onto, or underneath, the bottom of the contents to form a package capable of holding said contents.

18. The process of claim 17 wherein said sealing means comprise shrink-wrapping.

19. The process of claim 17 wherein said sealing means comprise adhesive.

20. A transportable packaging system for the positionally stable storage and transport of food and other products, comprising a sheet that is transformable into a package, said sheet being comprised of at least one layer, and further comprising a handle that is attached integrally at points near opposite edges of a face of said sheet, such that the handle crosses the top of the resulting package at approximately the center thereof.

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