PLASTIC WRAP CONNECTOR

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ABSTRACT

A connector is attached to one end of plastic wrapping film as it is deployed from a roll. A connector firmly holds one end of the plastic wrap material as it is bunched together. An operator, once having connected the plastic to the connector, then attaches the connector to a package to be wrapped. The plastic is then deployed (either manually or automatically) from the roll around the package.
PLASTIC WRAP CONNECTOR

FIELD OF INVENTION

[0001] The present invention relates generally to the field of plastic wrap packaging. In particular, the present invention is directed to a device for more efficiently beginning a plastic stretch wrap operation.

BACKGROUND ART

[0002] The packaging industry has developed a variety of techniques for packing a wide variety of items. One of the most adaptable techniques is the use of plastic wrap, and more specifically plastic stretch wrap film. The use of plastic stretch wrap has developed to the point that this material is used to wrap everything from small boxes to pallets of crates. The terminology stretch wrap or plastic film is well recognized in the packaging industry as denoting a wide variety of different products that are used in a particular class of packaging situations.

[0003] In most of these situations, a stretchable plastic film is preferably placed under tension and deployed over the item to be wrapped. The plastic film clings to the item to be wrapped, and clings to itself so that at the end of the wrapping process, the plastic film holds onto itself and maintains some of the original pressure under which the film was deployed. The elastic properties of the film hold it securely to the package that has been wrapped.

[0004] Plastic stretch film can be deployed using any number of different systems. These include a hand-held spool holding a roll of plastic stretch film that can be pulled off of the roll as it is deployed manually in any manner that can be managed by the individual holding the spool. At the other end of the spectrum is the use of robots that can automatically carry out most of the wrapping operation in accordance with predetermined settings. Relatively large packages can be wrapped in a quick efficient manner using wrapping systems that automatically move both the package and the roll of plastic stretch film until the package is entirely encased. An automatic system or robot can easily finish the operation based upon its preprogramming and the fact that the plastic stretch film sticks to itself, especially when deployed under tension.

[0005] Examples of various holders and deployment systems for plastic stretch wrap are found on pages 106-114 of the Uline catalogue dated spring/summer 2000. These film handling and deployment systems are incorporated by reference as examples of conventional art with which the present invention can be used.

[0006] Unlike the completion of the wrapping process, which occurs quickly and easily, and can be effected by an automated system, the beginning of the wrapping process is extremely cumbersome. Even with automated systems, an operator has to find and hold the end of the plastic as it is pulled from the roll. The operator then must attach the plastic firmly to an appropriate place on the package or the pallet supporting the package for the rest of the wrapping operation to commence. If the end of the plastic is not properly secured to the package, the entire wrapping operation can be compromised. Generally, it is necessary to tie the end of the plastic roll to the package, often necessitating awkward positioning on the part of the wrap system operator. As a result, the initial attachment of the plastic stretch film to the package is usually the most time-consuming and arduous part of the operation. As wrap system operators become more fatigued, the necessary initial part of the wrapping operation is further slowed. If the wrap is manually applied, the overall process is further slowed. The result is inefficiency and higher production costs.

[0007] Accordingly, there is a definite need in the packaging industry for a quick and easy technique or device for attaching the reading end of the plastic stretch roll to a package to begin the wrapping process. Such a device or technique would be extremely easy to use and relatively inexpensive.

SUMMARY OF THE INVENTION

[0008] Accordingly, it is one object or goal of the present invention to overcome the difficulties of conventional plastic stretch wrap systems.

[0009] It is another object of the present invention to provide a technique or device for use with a wide variety of different types of plastic wrapping systems.

[0010] It is a further object of the present invention to provide a device to begin a plastic wrapping operation in a quick, efficient manner.

[0011] It is an additional object of the present invention to provide a device for beginning a plastic wrapping operation, where the device is disposable due to its low cost.

[0012] It is still another object of the present invention to provide a device to begin a plastic wrapping operation, where the device is extremely simple and easy to use.

[0013] It yet a further object of the present invention to provide a technique for beginning a plastic wrapping operation in which the time and effort of the operator of the system is minimized.

[0014] It is again an additional object of the present invention to provide a device for beginning a plastic wrapping operation, where the device admits to a wide variety of modifications and adaptations.

[0015] It is still a further object of the present invention to provide a technique for beginning a plastic stretch wrap operation where one end of the film from a plastic roll can be connected very securely with minimum effort on the part of the system operator.

[0016] It is yet an additional object of the present invention to provide a device for beginning a plastic stretch wrap operation, in which the device provides enhanced safety and ease to the wrap system operator.

[0017] It is again a further object of the present invention to provide a device for beginning a plastic stretch wrap operation that is particularly effective for use with a pallet.

[0018] It is still another object of the present invention to provide a device for beginning a plastic stretch wrap operation that can be used with a wide variety of package types and package support devices.

[0019] It is again an additional object of the present invention to provide a device for beginning a plastic stretch...
wrap operation where the leading end of the plastic wrap does not have to be tied to the package or the package support.

[0020] These and other goals and objects of the present invention is achieved by a connector for connecting plastic wrapping material to a package to be wrapped. The connector includes two arms connected at one end of each to form a substantially V-shaped structure with an interior apex. The connector also includes a hook structure arranged at one end of one of the arms and configured to connect to the package to be wrapped.

[0021] Another aspect of the present invention includes a method for wrapping a package with plastic wrapping material. The method includes the steps of attaching one end of the plastic wrapping material to a first part of a connector. Next a second part of the same connector is attached to the package to be wrapped. Finally, plastic wrapping is to be put around the package using the connector as a contact point.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] FIG. 1 is a side view depicting the configuration of the connector of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0023] FIG. 1 depicts a plastic connector 10 for beginning a plastic stretch wrap operation in accordance with a first preferred embodiment of the present invention. A number of variations are depicted along with the basic connector in FIG. 1.

[0024] Connector 10 is configured to have two arms 1, 3 in a rough V-shape, with an interior apex 2 therebetween. A hook structure 4 extends from the second arm 3. In the first embodiment, connector 10 is preferably made of a low density plastic, approximately \( \frac{1}{2} \) of an inch thick. The connector can be formed by cutting from or stamping from a sheet of low density plastic or by an injection molding process. The overall structure of connector 10 is flexible, both laterally, and longitudinally. As a result, connector 10 can be formed to conform to the size and shape of the articles (to be packaged) to which it is to be connected.

[0025] The two arms 1, 3 of the V-shaped structure are used to hold the end of the plastic film (not shown) when taken from a roll. In one embodiment, hook structure 4 is designed to attach to a wooden pallet holding the packages to be wrapped. In an embodiment that is configured specifically for use with wooden pallets, arm 1 is approximately 3 inches in length, arm 3 is approximately 2 inches in length, and hook structure 4 has approximately a 1 inch inside radius. As previously indicated, the plastic constituting connector 10 is low density, easily cut or stamped from a sheet. The thickness of the plastic is approximately \( \frac{1}{2} \) inch.

[0026] The size of hook structure 4 is directed to easily fitting around the floor pieces of a standard wooden pallet. A fairly wide range of pallet sizes and configurations can be accommodated by the structure of connector 10 as depicted in FIG. 1. However, larger pallets or different configurations of pallets can be accommodated by altering the size and even shape of hook structure 4.

[0027] The V-shaped structure constituted by arms 1, 3 is crucial in that the end of the plastic as it is taken from the roll is inserted between the two arms and held by the interior apex 2. The full thickness of the plastic roll is pulled together, inserted firmly into interior apex 2 and held between arms 1, 3. Since the plastic film is easily compressible and the interior apex 2 flexible, a firm friction connection between the plastic film and the interior apex can be achieved very easily simply by bunching the entire width of the plastic film at its leading end and inserting the compressed plastic forcefully between arms 1, 3, forcing them slightly further apart. The tendency of the plastic film to expand and the arms 1, 3 to return to their original position effects a very strong connection between connector 10 and the plastic film from the roll.

[0028] In operation, the operator of the plastic film wrapping system pulls the leading edge of the plastic film from the roll of plastic, bunch the end together and insert it between arms 1, 3. Then the operator need only hook connector 10 to a suitable attachment point on the package to be wrapped, or preferably to the pallet supporting the package. Tension is maintained as the plastic is unrolled and attached to an appropriate point using connector 10. Once this has been done, the normal wrapping operation can proceed without delay or other inconvenience. The operator need not waste time and energy tying the end of the plastic film to either the pallet or the package being wrapped. As a result, a more secure connection is made to the package/pallet combination, and far less energy is expended in making the connection. The rest of the wrapping operation proceeds more quickly since tension is not lost in an awkward tying operation. But rather, tension is maintained by the rapid unrolling of the plastic film as the connector is placed on the pallet/package arrangement, and the remainder of the wrapping process proceeds immediately.

[0029] A wide variety of plastic films and rolls can be accommodated by making minor modifications in the connector structure 10 of FIG. 1. For example, interior apex 2 can be increased in size to conform with the dotted line in FIG. 1, depicting concavity 5. Such a configuration allows a greater mass of plastic film to be held at interior apex 2, thereby accommodating much wider rolls of plastic film, or heavier plastic wrapping material. As wider rolls of plastic film (or heavier plastic) are used, the size of concavity 5 can be increased, as can the size of arms 1, 3.

[0030] It should be noted that while standard plastic wrapping film is used in a number of embodiments of the present invention, thicker wrapping plastic can also be used with appropriate adjustments of the size of arms 1, 3 and concavity 5. Further, since the connector 10 is to be expended as a part of the wrapping of the package, additional techniques can be used to hold the plastic permanently between arms 1, 3.

[0031] While the first preferred embodiment of the present invention is made of a low density plastic, any appropriate material can be used. Very often such materials are dictated by the type of plastic film being used for wrapping the package, environmental conditions, specific packing requirements and the size of the package. In some applications, the contact 10 can be made of wood, or even cardboard. Any type of plastic can be suitable, as well as rubber, or even metal. Any weight or material can be selected depending upon the requirements of a particular packing situation.
Further, hook 4 need not be rounded as depicted in FIG. 1. Rather, the hook structure can be squared, or have multiple sides, for example an hexagonal configuration. Since contact 10 is designed in at least one embodiment to be disposable in that it is shipped with the product, and is expected to be used only once, adhesive can be used to permanently, and more effectively hold the plastic between arms 1, 3. Further, adhesive such as adhesive pad 8, can be used in the hook structure 4 to better grip either the package or a supporting pallet. Other devices can also be used to better hold both the plastic and the package or its support. For example, serrations 6 can be provided on the interior arms 1, 2 of the V-shaped structure to better grip those plastic films that tend to be tough or slippery. Likewise, teeth can be provided on the interior of the hook structure 10 to better grip either the pallet or the boxes placed thereon.

Further, connector 10 of the present invention can be made of multiple materials such as a metal framework and plastic teeth. Various types of adhesive can be used, including removable gum.

While it is expected that the connectors 10 are disposed of by being sent with the wrapped packages, it is also possible that the connectors can be retrieved from the packages and reused by the recipient. In the alternative, the recipient of the packages can send the connectors back to the source for reuse. Because the simplest versions of the connector is a lightweight plastic, the low cost of these items may be such that returning the connectors for reuse is not justified. In the alternative, connectors that are made of more durable or expensive materials can be reused either by the recipient or by the original sender once the connectors have been returned.

The use of even expensive materials to constitute connector 10 is easily justified through the savings that will be achieved as a result of faster packing operations. The individuals handling the packing operation for plastic film wrapping process will not only carry out the job more quickly and more efficiently but there will be less deterioration due to operator fatigue.

While a number of embodiments have been presented by way of example, the present invention is not limited thereto. Rather, the present invention encompasses all variations, modifications, adaptations, permutations or embodiments that would occur to one skilled in this technology having been taught the present invention. Accordingly, the present invention should be limited only by the following claims.

I claim:

1. Connector for connecting plastic wrapping material to a package to be wrapped, said connector comprising:

(a) two arms connected at one end of each to form a substantially V-shaped structure with an interior apex; and,

(b) a hook structure arranged at one end of one of said arms, and configured to connect to said package to be wrapped.

2. The connector of claim 1, wherein said plastic wrap is a stretchable film.

3. The connector of claim 2, wherein said stretchable film is deployed from a roll.

4. The connector of claim 3, wherein said hook structure is semi-circular in shape.

5. The connector of claim 1, wherein said connector is laterally and longitudinally flexible.

6. The connector of claim 5, further comprising a concavity formed at said interior apex.

7. The connector of claim 1, wherein said hook structure further comprises means for gripping said package to be wrapped.

8. The connector of claim 7, wherein said means for gripping comprise a serrated edge on an interior surface of said hook structure.

9. The connector of claim 7, wherein said means for gripping comprise adhesive material arranged on an interior surface of said hook structure.

10. The connector of claim 1, wherein said connector is constituted by a material selected from the group consisting of plastic, rubber, wood, cardboard and metal.

11. The connector of claim 1, wherein said package to be wrapped includes a pallet to which said hook structure is connected.

12. The connector of claim 10, wherein said connector is substantially 0.1 inch in thickness and constituted by a low density plastic.

13. The connector of claim 1, wherein said two arms and said interior apex comprise means for gripping said plastic wrapping material.

14. The method of wrapping a package with plastic wrapping material, said method comprising the steps of:

(a) attaching one end of said plastic wrapping material to a first part of a connector;

(b) attaching a second part of said connector to said package; and,

(c) deploying said plastic wrapping material around said package.

15. The method of claim 14, wherein said plastic wrapping material is stretchable film deployed from a roll.

16. The method of claim 15, wherein step (a) of attaching a second part of said connector to said package and step (b) of deploying said plastic film are carried out under tension as said film is deployed from said roll wherein said plastic film stretches as it is deployed.

17. The method of claim 16, wherein said package comprises a pallet and said step (b) of attaching a second part of said connector comprises attaching said second part of said connector to said pallet.

18. The method of claim 17, wherein said step (b) of attaching a second part of said connector is carried out by a human operator and step (c) of deploying said plastic film is carried out using an automated plastic film deployment system.