

19



Europäisches Patentamt
European Patent Office
Office européen des brevets

11

Publication number:

0 213 058
A2

12

EUROPEAN PATENT APPLICATION

21

Application number: **86630126.0**

51

Int. Cl.⁴: **B 65 D 75/28**

22

Date of filing: **12.08.86**

30

Priority: **15.08.85 US 765759**

71

Applicant: **THE GOODYEAR TIRE & RUBBER COMPANY, 1144 East Market Street, Akron, Ohio 44316 (US)**

43

Date of publication of application: **04.03.87**
Bulletin 87/10

72

Inventor: **Fehrenbach, Paul Lyle, 7776 Laura Avenue, N.W., Massillon Ohio 44646 (US)**
Inventor: **Hopton, Thomas Edward, 2355 Elizabeth Drive, Stow Ohio 44224 (US)**

84

Designated Contracting States: **BE CH DE FR GB IT LI NL SE**

74

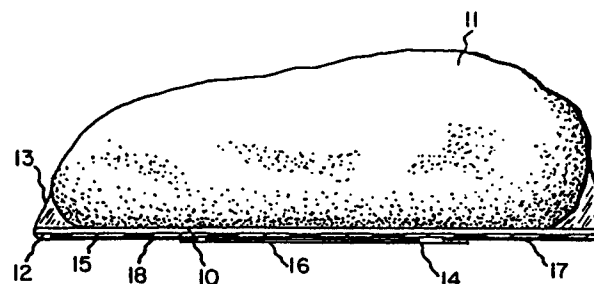
Representative: **Weyland, Joseph Jean Pierre, Goodyear International Tire Technical Center Patent Department Avenue Gordon Smith, L-7750 Colmar-Berg (LU)**

54

A sealed package and method of making said package.

57

This invention provides a leakproof sealed package for food stuffs by applying an adhesive to the bottom or a portion of the bottom of the food tray, preferably of fiber mat or foam tray, placing food, especially the wet meats in said tray and stretch or shrink wrapping with a thin thermoplastic film such as plasticized PVC or polyolefin treated or untreated, printed or unprinted and sealing the film fold of the wrap to the bottom of the tray; preferably by heat and adhesive.



EP 0 213 058 A2

A SEALED PACKAGE AND METHOD OF MAKING SAID PACKAGE

5 This invention relates to a method of making a leak
proof sealed package of food-like stuff and to said
package and to the container. More particularly, this
invention relates to a method of sealing the seam or
seams formed by handwrapping, semi-automatic or
automatic wrapping machine to seal the film to the
bottom of the container with an adhesive seal to
10 prevent leakage of fluids, such as juice from red meats
or poultry.

Prior Art

15 Fresh, moist foods such as red meats, poultry and
produce have long been wrapped in some type of tray
container or support and overwrapped with a flexible
packaging film; the most commonly used being thin gauge
plasticized PVC. Once the individual package was
wrapped, either by hand, semi-automatic, or automatic
20 equipment, a device was used to seal the film making
the package remain tight and leakproof. A fusion seal
of the overwrapping film, was difficult to achieve
consistently and reliably by this process. The package
seal could loosen and become wet and unattractive in
25 the display case. Juices of red meat and poultry might
leak into the display case and/or upon the hands and
clothes of customers who handle the packages.
Equipment manufacturers have not been able to resolve
this problem satisfactorily. Although fusion seals can
30 be achieved, degrees of false "tack" seals are common
which appear to be fused but under the conditions of
moisture and refrigeration would eventually separate.
Centralized processors subject packages to harsher
handling and transportation conditions than retail

operations. They require a seal that is leak proof. The purpose of the invention is to provide such a leak proof package.

5 Summary of the Invention

 This invention in its main aspects supplies a method of positively sealing the film to the bottom of the container with an adhesive.

10 Another aspect of this invention is to supply a method of obtaining a positive seal between the tray or container and the film utilizing conventional packaging equipment or hand wrapping . Thus our invention permits positive seals to be obtained of meat and poultry packages.

15

Description of the Invention and Its Best Mode

 Although any of the packaging films and preferably those capable of heat sealing may be used in this invention, it will be described in its preferred aspect
20 with a clear, flexible film that meets the governmental regulations for food contact such as the well known PVC or other polyolefin films. These wrapping films are well known and widely available from many commercial sources. Specific examples of satisfactory films are
25 the packaging films of about 0.3 to about 10 and preferably 0.5 to 1.5 mils thick made and available as polyvinyl chloride (PVC), polyvinylidene chloride (Saran), ethylene vinyl acetate (EVA), polyethylene, polypropylene and flexible butadiene styrene copolymer
30 (SBR) film to name a few of those well known and readily available for this purpose of wrapping food stuff such as meat and poultry. The polyester films such as PET are also available and used for this purpose.

The boards or containers, viz. trays, useful in making the packages of this invention are likewise well known and readily available commercially. They fall into three broad categories: cellulosic, foam materials and solid plastic. Generally, the first two are referred to as paper board composition or foam composite trays. The fiber board trays or containers are widely used for the wet meats such as pork and chicken. Styrene foam trays may be used with a paper soaker mat or pad to absorb the fluids.

According to current commercial practice, these trays or boards are generally rectangular and have upward extending sides and are supplied in packages stacked one on top of the other. Each individual tray or container is removed from the package and filled with red meat such as beef, pork, chicken, fish or related food product and then wrapped in a suitable film from a supply roll with the overlapped or seam area of the package being under the bottom of the container. Then in the customary practice, the wrapped package is placed on the belt sealer or other wrapping equipment to be wrapped and sealed. The lapped film along the bottom of the package which in some instances will vary from 2 layers up to 5 layers in the so-called pockets of the side folds is sealed. It is generally these 3 to 5 layers of the so-called pockets where the leaks occur in the current practice under the stress and handling operations. Part of the chilling, labeling, cartonizing and multiple shipping may occur with centralized processing and may place greater stress on the package.

Applicants have discovered that a positive seal can be obtained not only in the single layer but the 3 to 5 and higher layers of the so-called pockets with the

bottom of the tray by applying a coating or seam of adhesive along the perimeter or rectangular area of the bottom of the tray or container, and then following in one embodiment the usual wrap procedure where the heat of the conventional belt heat sealer achieves a seal between the bottom of the container and the film by the adhesive from the coat or seam thereof. Usually the weight of the package is sufficient to cause sealing but additional pressure of from a fraction of a pound to about 8-10 psi is sufficient to give satisfactory sealing. Likewise the temperature used is a function of the adhesive, the film and the tray but it should be sufficient to seal the film in the equipment used. Some machines use up to 190 to 198°C for about 1 to 5 seconds. Alternately the package may be sealed by hot air from a blow gun or similar hot air means.

The adhesives useful in this invention are those well known and readily available for adhering films and are the well known classes of water emulsion, adhesives, the solvent adhesives and the hot melt adhesives. These adhesives are made using the well known polymers and copolymers such as butadiene styrenes, polyisoprenes, the blocked diene polymers or copolymers, natural rubber, polyvinyl acetate, polyester, ethylene polyvinyl acetate, the natural or hydrocarbon waxes, resins and wood resins. Specific representative examples of these classes are the adhesives known as Wingtack™ 95 emulsion, Plioflex™ latex, Wingtack™ 10 emulsion or Wingtack™ G-5 polyterpene, or the hot melts, VPE 10035 or VPE 4709 to name a few of the representative ones which are useful in this invention and meet governmental standards for food use.

The nature of this invention may be more readily understood by reference to the drawings where

Figure 1 is a side elevational view of the package of this invention; and

5 Figure 2 is a bottom view of the tray of one embodiment of this invention to show the adhesive in the perimeter seam area rather than the entire bottom.

Referring specifically to Figure 1, numeral 10 represents a tray of polystyrene foam, a paper mat or a clear plastic and numeral 11 represents a chicken or related poultry product placed on the tray. The tray 10 and poultry 11 are wrapped so the bottom 12 of the tray rests on a sheet 13 of film which has end 14 as shown with various edges of the film folded under to give layers identified by numerals 15, 16 and 17. Then these folded edges are heat sealed by applying pressure and heat to activate the adhesive 18 and cause the layers of film to adhere to each other and the tray.

15 In Figure 2 a seam of adhesive 18 is shown applied essentially around the perimeter of tray bottom 12. In an alternate embodiment the width of the perimeter may be extended until the adhesive fills the entire area designated by numeral 20. In some embodiments it may be more convenient to use a sheet of adhesive about 0.1 to 5 and preferably 0.3 to 1.5 mils thick which will cover the entire surface or most of the surface of the bottom of the tray. This is a particularly desirable option when using a hot melt adhesive. Another option is to spray coat or doctor coat the bottom of the tray or any other method normally used in applying adhesive to the bottom thereof.

20 The nature of this invention is better exemplified and illustrated by the following illustrative and representative examples where all parts and percentages are by weight unless otherwise illustrated.

25

30

35

Example I

Chopped up chicken or pork products were placed in polystyrene poultry trays. It should be appreciated that the tray manufacturer could apply the adhesive to the tray at the time of its manufacture and thus sell the packager a tray having the adhesive preapplied to the bottom thereof. Each of the trays prior to use was coated with a 0.5 mil coat of a waterbased emulsion adhesive, Pliobond 7005™, by spraying, doctoring and print rolling and then the adhesive coat was dried to give a clear and tackless coating on the tray. Then the trays coated with the dry adhesive and containing the meat were wrapped in the normal manner with 100 gauge Vitawrap™, a plasticized PVC food film. The film was sealed by placing the package on an automatic wrapping machine, Weldotron™ A-12 and heat sealed at about 195°C and a fraction of pound pressure for about 1 to 3 seconds. Alternately another package was sealed by hot air from a blow gun. The resulting sealed packages were subjected to storage in a freezer and other handling without spillage of meat fluids as was experienced with packages sealed without the adhesive coat.

The Vitawrap film™ above can be replaced by a polyester film or other commercial wrap films and good seals are obtained according to this invention. The hot melt adhesives of the polyester type are particularly desirable with the polyester film and may be applied as a seam or coat to the bottom of the tray.

Example II

In one embodiment a hot melt adhesive sheet of about 0.1 to 5 mils and preferably about 0.3 to 1.5 is

placed between the bottom of the tray and the film and then heat sealed to give satisfactory leakproof packages. These hot melt adhesive sheets may be obtained by any of the well known sheet making techniques such as extruding, casting or doctoring the hot melt adhesive onto a satisfactory surface.

A person of ordinary skill in the wrapping art readily appreciates that with certain wrapping film trays certain adhesives are used. For instance, a solvent adhesive where the solvent has a good solubility for styrene would not be used for a styrene tray but an adhesive having a low or no solubility like those using the paraffinic hydrocarbon, THF and lower alcohols would be used with a styrene tray. Likewise PVC, saran and related films are known to be effected by solvents such as Ketone and THF, therefore these solvent adhesives would not be preferred for these films. Where polyethylene film is used, it is desirable to corona treat the surface to enhance the adhesion of the adhesive to the film. Generally the emulsion adhesives are preferred for use with the trays and films. Thus, a person of ordinary skill in the art would select the tray, film and adhesive to eliminate these defects and to meet governmental standards for the product being packaged.

According to this invention containers are provided made of cellulosic or styrene foam having a shape to display meats and related food stuff in essentially three dimensions as the top and sides of the packages are viewable since the bottom of the tray has relatively short sides - usually less than 2.5cm to give a flat tray appearance or a flat board appearance as the sides relatively speaking give the container the appearance of a thick board in one perspective.

Some states require the bottom of a meat tray to be clear or see-throughable so meat can be viewed from all sides. These see-throughable trays are generally made of clear plastics and can not have the paper soak mats to absorb the juices. Also, the clear trays generally are more flexible and deform more in semi-automatic and automatic packaging equipment, therefore, it is more difficult to get satisfactory seals with the clear plastic trays and these packages are often spoken of as messy.

Example III

A series of clear plastic trays made of rigid polyvinyl chloride (PVC), polyethylene terephthalate (PET) and polystyrene are each coated along the entire bottom surface of the tray with a water emulsion of ethylene vinyl acetate adhesive by painting the adhesive on to give a dry, clear coating about 0.5 to 1 mil thick.

Wet meat is placed in each tray and then the tray is sent through a wrapping machine, Weldotron A+12™ and wrapped in Vitafilm™ to give packages that are leak proof and the meat can be viewed from all sides.

With the clear trays of solid plastic the adhesive should yield a clear coating in the thickness range being used, where the packages are sold in some states whereas in other states it is immaterial.

The clear hot melt adhesive i.e., VPE 10035 or VPE 4709 can be used to coat the bottom of these clear plastic trays and then they can be used to obtain satisfactory clear, leak proof wrapped package.

The most preferred adhesives for use in this invention form an adhesive bond between the film and the tray that fails cohesively. While no minimum bond

strength is essential so long as the film to tray bond remains liquid tight, it is preferred that a bond strength of about 0.5 to 5, more preferably 1 to 3 psi be attained on a 1 inch (2.54cm) strip of film in a
5 peel test. In addition, adhesive must be selected which is not adversely affected by liquid or liquids present in the food stuff.

While certain representative embodiments and details have been shown for the purpose of illustrating
10 the invention, it will be apparent to those skilled in this art that various changes and modifications may be made therein without departing from the spirit or scope of the invention.

5 What is claimed is:

1. A sealed package useful in packaging food stuff
including

(a) container having a bottom;

(b) a food stuff contained on said container;

10 (c) a polymeric film having a thickness of about
0.3 to about 10 mils, characterized by said container
having an adhesive at least around the bottom periphery
of said container and said film being sealed to the
bottom of said container by said adhesive to form a
15 fluid tight package of the film around over the
container.

2. A method of forming a sealed package that is
leakproof characterized by applying a coating or a seam
20 of adhesive at least around the bottom side of a
container, placing a food stuff on said container and
wrapping said container with a wrapping film to leave
seams formed by said film under the bottom of said
container, subjecting said film to sufficient heat
25 and/or pressure to form a seal between said film layers
and between the adhesive on the bottom of said
container and said film.

3. The method of Claim 2 characterized in that the
30 container is a composite of a cellulosic material.

4. The method of Claim 2 characterized in that the
container is polystyrene.

5. The method of Claim 2 characterized in that the film is a polyester.

5 6. The method of Claim 2 characterized in that the adhesive is a hot melt adhesive.

10 7. The method of Claim 2 characterized in that the adhesive is a hot melt adhesive having an ethylene vinyl acetate copolymer base.

8. The method of Claim 2 characterized in that the adhesive is applied as a water emulsion of ethylene vinyl acetate polymer.

15 9. The method of Claim 2 characterized in that the adhesive is applied as a water emulsion of natural rubber or butadiene styrene copolymer.

20 10. The method of Claim 2 characterized in that the adhesive is applied essentially concurrent with shaping the tray.

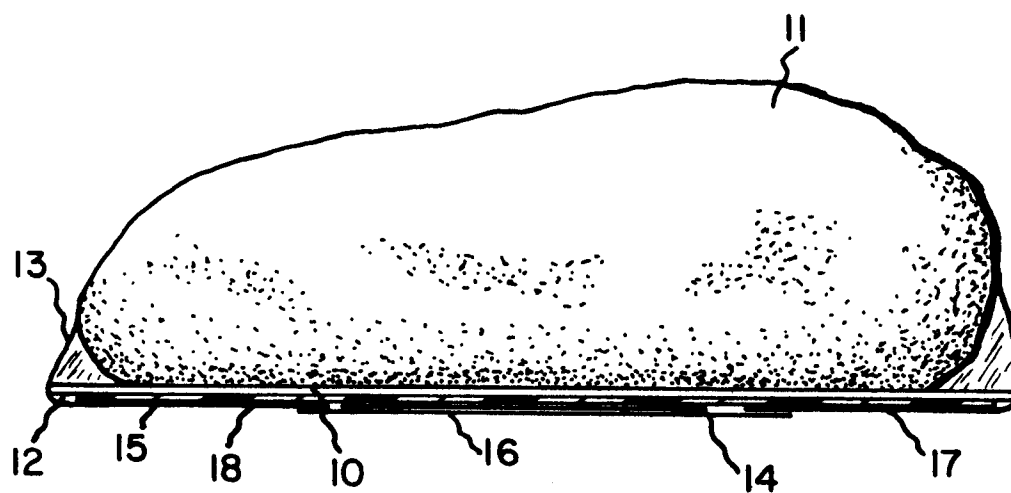


FIG. 1

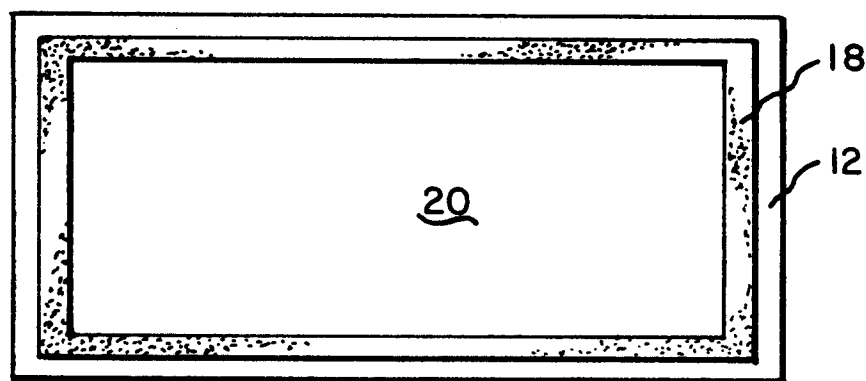


FIG. 2