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(71) Applicant: **CCL Label, Inc.**
Sioux Falls, South Dakota 57117 (US)

(72) Inventors:
- **Woodyard, Billy W.**
  Tea, South Dakota 57064 (US)
- **Baum, Robert E.**
  Dell Rapids, South Dakota 57022 (US)

(74) Representative: **Rees, David Christopher et al**
Kilburn & Strode
30 John Street
London WC1N 2DD (GB)

(54) Container handle opening dust seal

(57) A container dust seal (20) for sealing the handle opening (37) in a currugated box (26). The dust seal (20) includes an unapertured top film (28) sealed to a slit base film (29) in a laminated arrangement. The base film (29) can be mounted to the interior of the box over the handle opening (37). Fingers (36) can be inserted through the handle opening (37) and through the slit base film (29) to lift the container (26) while the unapertured top film (28) prevents dust from entering the container (26).

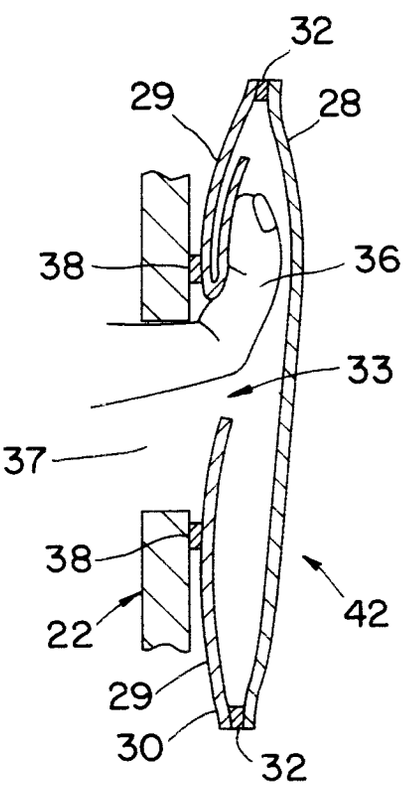

FIG. 3

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Description

The present invention relates to sealing devices for containers, and more particularly to sealing devices preventing interior contamination of containers during handling of the containers.

Shippers of sensitive electronics and computer equipment strive to assure that dust and other contaminates do not enter the interior of containers used to package the equipment for shipment and storage. This dust can cause subsequent equipment failure.

These shippers typically use containers, such as corrugated boxes, that have handle or container openings into which the shippers can insert their fingers to grasp and to lift the containers. Often the handle openings simply consist of slits in the containers, which the shippers force apart to form the handle openings as they insert their fingers. Unfortunately, dust and other contaminates can enter the interior of the containers along with the shippers' fingers or after the shippers have formed the handle openings.

The shippers have attempted to minimize this contamination by inserting separate sheets of material, such as corrugated cardboard, between the handle openings and the packaged equipment. However, this method has several disadvantages. First, the separate sheets provide limited reliability against contamination of the packaged equipment. Further, the separate sheets increase the cost of the container.

The aforementioned problems are overcome in the present invention comprising a dust seal adhesively mounted on the inside of the container over the handle opening to prevent dust from entering the container through the handle opening.

More specifically, the dust seal preferably includes a dust-tight finger mitten that is hermetically sealed about the handle opening of the container. Shippers who insert their fingers through the handle openings to lift the container, pass their fingers into the dust-tight finger mitten, which along with the hermetic seal prevents dust from entering the interior of the container.

In one embodiment, the dust seal has a top film that is sealed to a base film in laminated arrangement. The base film has an opening so that fingers can pass through the base film. The base film is sealed to the container to align the opening means of the base film with the handle opening. The top film does not have an opening and therefore prevents the ingress of dust and dirt into the container. The base and top films together define the mitten.

In another embodiment, the dust seal contains a top film that is laminated to a base film using an adhesive between the films in the perimeter zones of the films to form a dust-tight seal. The base film has an interior slit to allow fingers to pass through the base film. The base film is sealed to the container to form a dust-tight seal using an adhesive located between the container and the base film in an inner zone surrounding the slit, so that the slit is aligned with the handle opening. The top film is unperforated. Shippers can insert their fingers through the handle opening and the base film to lift the container. The seals and films prevent dust from entering the interior of the container and contaminating the packaged goods.

The dust seal of the present invention permits shippers to insert their fingers into the handle opening to lift the container; yet, the dust seal reliably prevents dust and other contaminates from entering the interior of the container through the handle opening. The dust seal costs less than the use of an additional sheet of material to attempt to seal the handle opening or block dust from entering the container interior, and is more reliable.

These and other objects, advantages, and features of the invention will be more readily understood and appreciated by reference to the detailed description of the preferred embodiment and the drawings.

Fig. 1 is a fragmentary perspective view of the dust seal of the present invention installed in the interior of a container;

Fig. 2 is a sectional view taken along the line II-II of Fig. 1;

Fig. 3 is a representation of the sectional view of Fig. 2 having a shipper's finger inserted into the dust seal;

Fig. 4 is a top view of the dust seal of the present invention; and

Fig. 5 is a sectional perspective view taken along the line V-V of Fig. 1.

The dust seal of the present invention is illustrated in the drawings and generally designated 20. The dust seal is shown in Fig. 1 sealed to the interior 24 of wall 22 of container 26.

In the preferred embodiment, container 26 is a folded corrugated box having a floor 21, a pair of side walls 23, and a pair of opposite end walls 22. While a corrugated container is illustrated, the dust seal of the present invention is equally applicable to containers and other packaging having access openings through the container 37. As used herein, "interior of the container" means the interior volume or space of the container 26.

A handle opening 37 is die-cut or otherwise formed in each of the end walls 24. As used herein, "handle opening" includes, but is not limited to, any structure or technique permitting fingers or a device to be inserted into a portion of the container to lift or otherwise move the container 26. "Handle opening" includes a hole or other opening in wall 22, as well as perforations or slits in wall 22 that can be pushed open when fingers are inserted.

Turning to Figs. 2-5, the dust seal 20 includes a top sheet or film 28 and a base sheet or film 29 made of a material that is impervious to dust. As used herein, "dust" has a broad meaning and encompasses dust, dirt, liquids, and other contaminates, particularly those

that may damage electronics and computer equipment or other sensitive contents. Preferably, the top and base sheets or films are made of plastic sheets of material, such as polyethylene, polypropylene, polystyrene, polyester, and combinations thereof. However, other materials impervious to dust can be used, such as paper. Top film 28 and base film 29 preferably are of the same size and shape and are overlyingly aligned with one another. Each has a perimeter zone 30 that encircles the perimeter of the film (Fig. 4).

The top film 28 is securely sealed to the base film 29 in laminated arrangement. One means to secure or seal top film 28 to base film 29 is to locate an adhesive 32 between top film 28 and base film 29 in the corresponding or aligned perimeter zones 30 of the top and base films. Suitable adhesives are pressure-sensitive adhesives or other adhesives, as are known in the art. Other means of sealing the top film to the base film include heat sealing, stapling, or other means of physically attaching the films together. Preferably, the top and base films are sealed to form a "dust-tight" seal, that is, a seal that does not allow dust to pass between the top and base films. Such a seal typically will be substantially continuous around the entire periphery of the lamination. More preferably, the means of sealing top film 28 to base film 29 forms a hermetic or air-tight seal.

Base film 29 includes an opening 33, which permits one or more fingers 36 to pass through the base film (Fig. 3). In the preferred embodiment, the opening 33 is one or more slits 34 in the base film 29. As seen in Fig. 4, the slit 34 includes at longitudinal slit 34a and transverse slits 34b along the longitudinal slits. The opening also could be a hole, perforations, or a relatively weak area so that one can easily push a finger through the base film. Base film 29 contains an inner or intermediate zone 40 surrounding the opening 33 (Fig. 4).

The base film 29 includes an adhesive 38 on the side of the base film that will face the box wall 22. The adhesive forms a continuous ring (race-track shaped as shown in Fig. 4) in the intermediate zone 40 surrounding the opening 33. Suitable adhesives and alternative securing or sealing means are the same as those used for the means of sealing top film 28 to base film 29, as discussed above.

Referring to Fig. 3, top film 28 and base film 29, together with the adhesive 32 form finger mitten 42. Finger mitten 42 is a mitten, pouch, or balloon that surrounds one or more fingers 36 as they are inserted through the handle opening. The laminated construction of the dust seal 20 permits the finger mitten 42 to lay flat against interior wall 24 before the fingers 36 are inserted into the finger mitten 42.

The dust seal 20 is manufactured including conventional techniques, particularly from the label manufacturing arts. Although not shown in the drawings, each dust seal is mounted on a release liner, or multiple dust seals are mounted on a single or continuous release liner, during manufacture. The release liner protects the adhesive 38 until the dust seal 20 is applied to the container.

The dust seal 20 is applied to the interior of the container 22 with the adhesive 38 engaging and adhering to the wall 24. The dust seal is aligned with and covers the entire handle opening 37, and the adhesive 38 surrounds the handle opening. "Aligned with" as used herein means that the opening 33 of the finger mitten 42 is aligned with the handle opening 37 so that a finger can be inserted into finger mitten 42 without communicating with or entering into the interior of the container. Preferably, the dust seal forms a "dust-tight" seal to prevent dust from passing between the base film and the wall. As noted above, and most preferably, the seal is a hermetic or air-tight seal. When the dust seal 20 is properly mounted, the finger mitten 42 is sealed about handle opening 37.

To lift the container 26 having the dust seal 20, a lifter inserts one or more fingers 36 through handle opening 37 and opening 33 into the finger mitten 42. The lifter forms a finger grip about wall 22 to lift container 26. Since finger mitten 42 is made of material impervious to dust and is sealed to wall 22 with a dust-tight seal, dust cannot enter the container interior through handle opening 37.

Claims

1. A dust seal (20) for a container (26) defining a handle opening (37) comprising: an unapertured top sheet (28); a base sheet (29) defining an opening (33) enabling human fingers (36) to pass through the base sheet (29); first securing means (32) for securing the top sheet (28) to base sheet (29) in a laminated arrangement, the first securing means extending about the opening (33); and second securing means (38) for securing the base sheet (29) to the container (26), the second securing means (38) also extending about the opening, whereby the dust seal (20) prevent dust and other contaminates from entering the container (26) through the handle opening (37) when the dust seal (20) is secured to the container (26).

2. A dust seal as claimed is Claim 1, characterised in that the first and second securing means (32,38) comprise an adhesive.

3. A dust seal as claimed in Claim 1 or Claim 2, characterised in that the first and second securing means (32,38) comprise an adhesive.

4. A dust seal as claimed in any preceding Claim, characterised in that the top sheet (28) and base sheet (29) have aligned perimeter zones (30) and the first securing means (32) comprises an adhesive located between top and base sheets (28,29)

only in the aligned perimeter zones (30).

5. A dust seal as claimed in any preceding Claim, characterised in that the base sheet (29) includes an intermediate zone (40) surrounding the opening (33) and the second sealing means (38) comprises an adhesive only in the intermediate zone (40).

6. A dust seal as claimed in any preceding Claim, characterised in that the opening (33) comprises a slit (34).

7. A dust seal (20) for a container (26) having an interior, an exterior, and a handle opening (37) comprising: a top sheet (28) having a first perimeter zone (30); a base sheet (29) having a second perimeter zone (30) corresponding to the first perimeter zone (30); an adhesive (32) located between the top and base sheets (28,29) only in the corresponding first and second perimeter zones (30) to seal the top sheet (28) to the base sheet (29) in a laminated arrangement to form a dust-tight seal; an interior slit (34) located in the base sheet (29), whereby fingers (36) can pass through the base sheet (29); an inner zone (40) surrounding the slit; an adhesive (38) located between the container (26) and the base sheet (29) only in the inner zone (40) to adhere the base sheet (29) to the container (26) to form a dust-tight seal and to align the interior slit (34) with the handle opening (37), whereby the container exterior does not communicate with the container interior, and whereby the container (26) can be lifted by inserting fingers (36) through the handle opening (37) without contaminating the container interior.

8. A container (26) having an interior and an exterior, a handle opening (37) and a dust seal (20); the dust seal (20) having a top sheet (28), a base sheet (29) with an opening means (34), a first means (32) for sealing the top sheet (28) to the base sheet (29) in a laminated arrangement, and a second means (38) for sealing the base sheet (29) to the container (26) to align the opening means (34) of the base sheet (29) with the handle opening (37), whereby a finger (36) can pass through the handle opening (37) and the base sheet (29) to lift the container (26) and whereby the container exterior does not communicate through the handle opening (37) to the container interior.

9. A container (26) having a handle opening (37), characterised by a dust seal (20) as claimed in any of Claims 1 to 7 surrounding the handle opening (37).

10. A dust seal (20) for a container (26) having a handle opening (37) comprising a dust-tight finger mitten hermetically sealed about the handle opening (37), whereby fingers (36) can be inserted through the handle opening (37) to lift the container (26) without passing dust into the container (26).

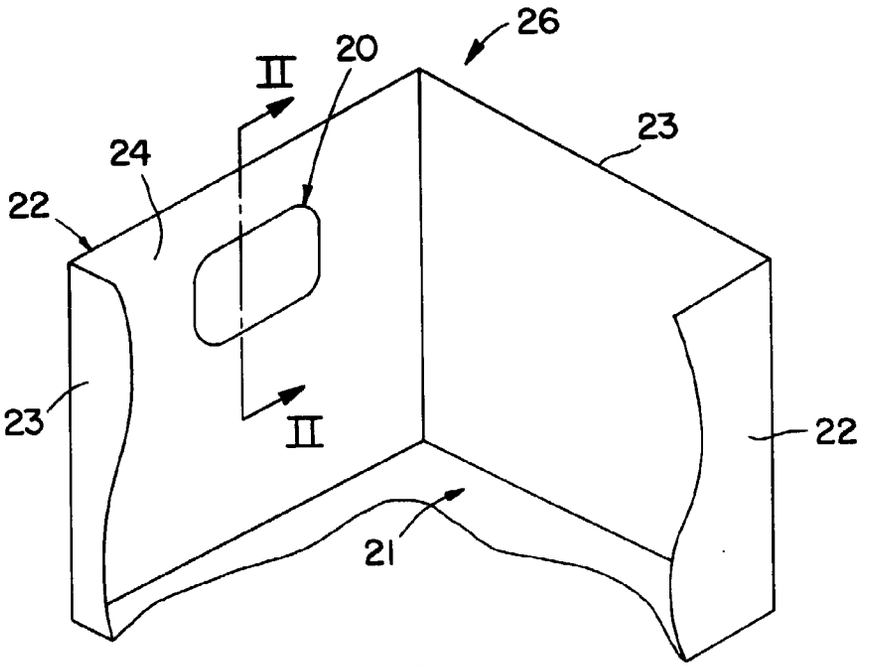

FIG. 1

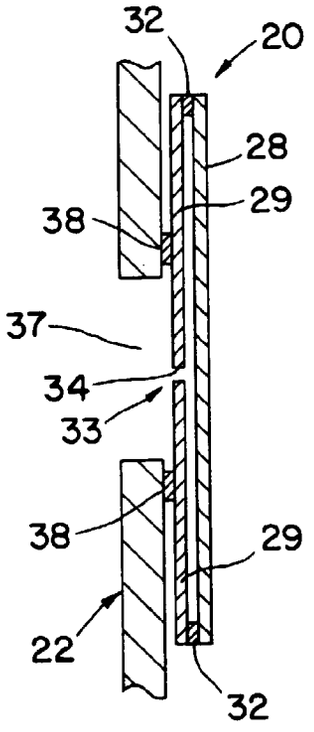

FIG. 2

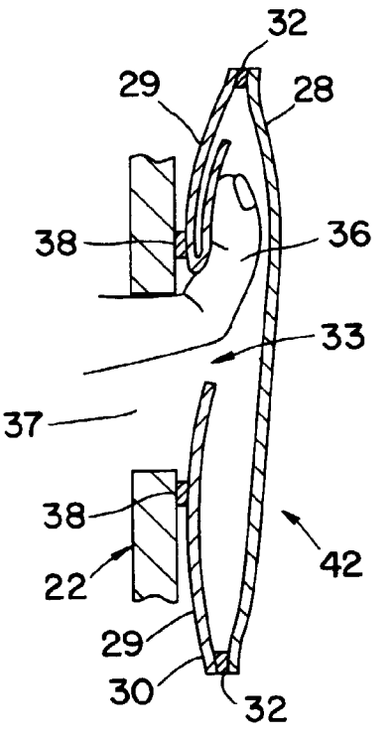

FIG. 3

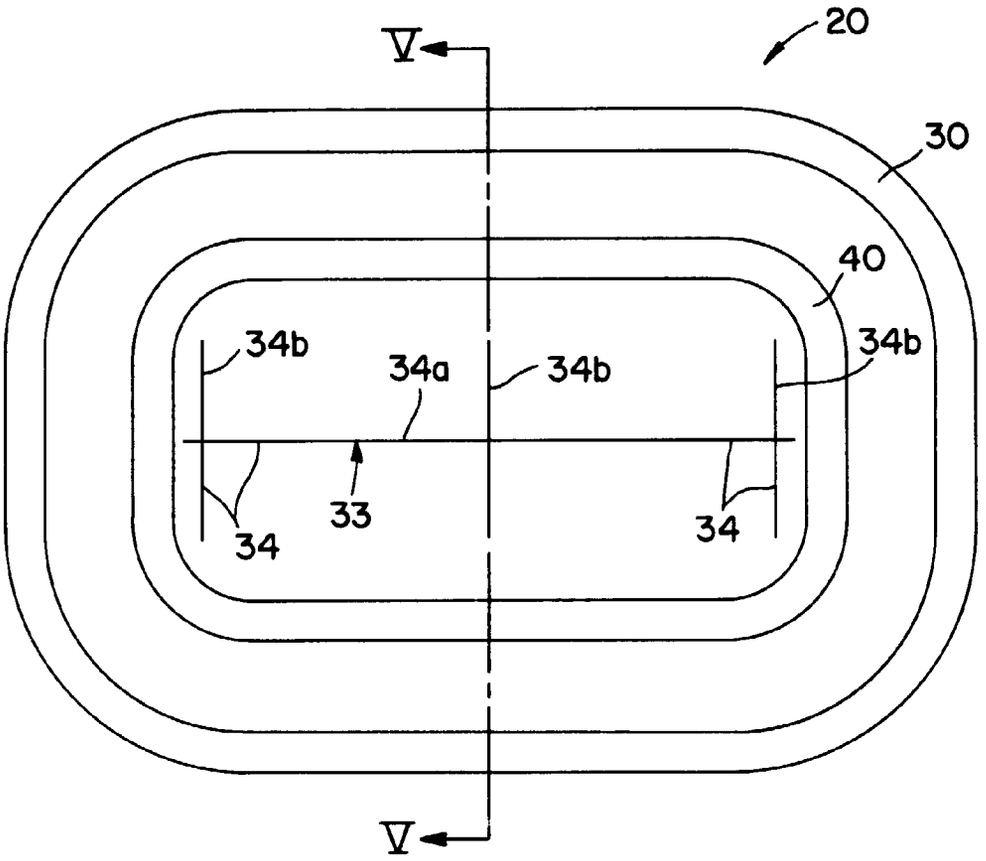
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FIG. 4

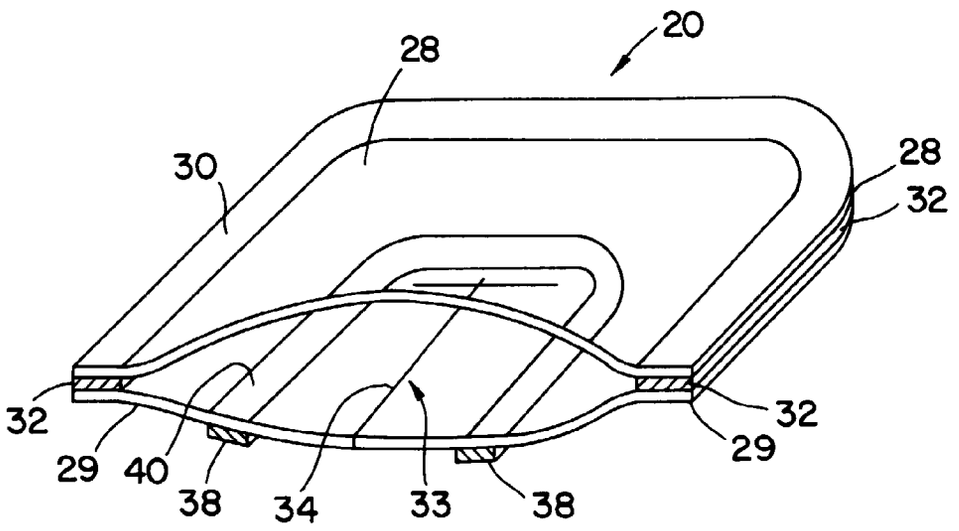
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FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 97 30 4000

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE 90 02 182 U (WERNER & MERTZ) 17 May 1990	10	B65D5/46
A	* claim 1; figures *	1,7-9	
X,P	WO 97 01488 A (CAPITOL PACKAGING CORP) 16 January 1997	10	
A	* abstract; figures *	1,7-9	
A	GB 2 248 055 A (ST REGIS PACKAGING LTD) 25 March 1992 * abstract; figure 2 *	1	
A	US 4 550 048 A (NAKAGAWA YASUYUKI) 29 October 1985		
A	FR 2 610 596 A (NICOLLET HUGUES SA) 12 August 1988		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 September 1997	Zanghi, A

CATEGORY OF CITED DOCUMENTS

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