Sept. 3, 1968 H. FREEMAN 3,399,797

CUSHIONING CONTAINER

Filed Nov. 9, 1966

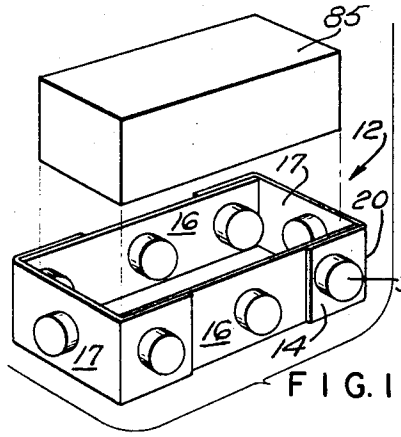


FIG. 1

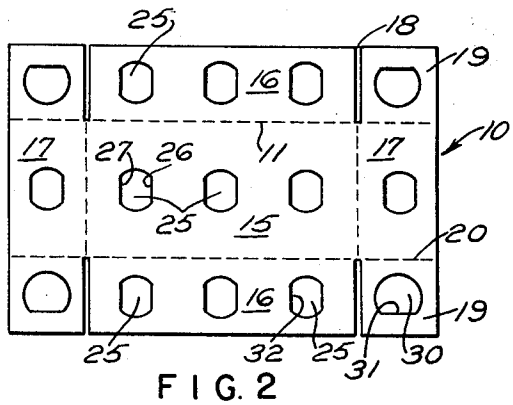


FIG. 2

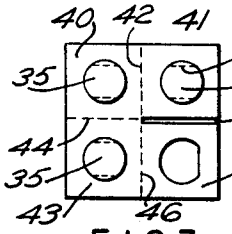


FIG. 3

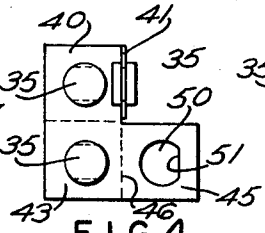


FIG. 4

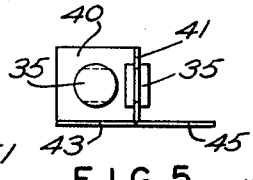


FIG. 5

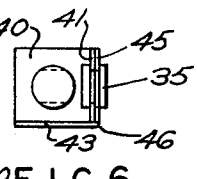


FIG. 6

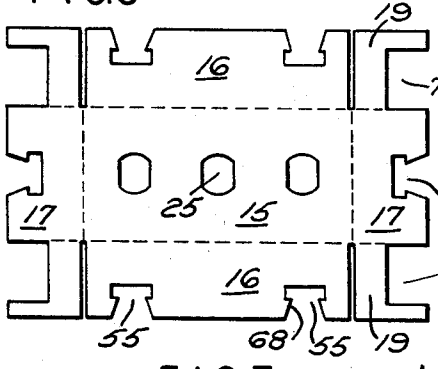


FIG. 7

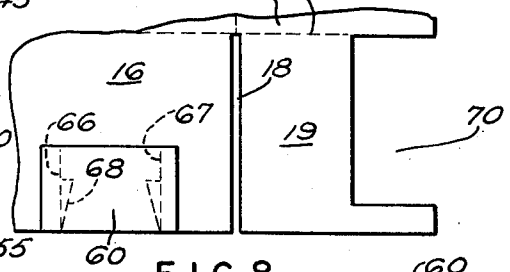


FIG. 8

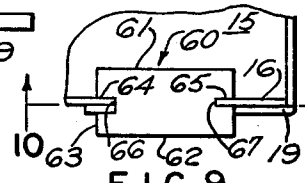


FIG. 9

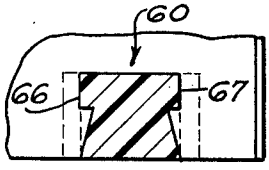


FIG. 10

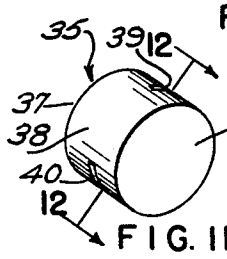


FIG. 11

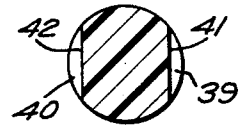


FIG. 12

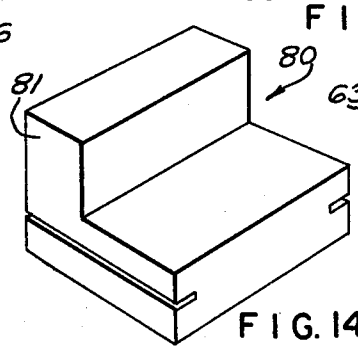


FIG. 14

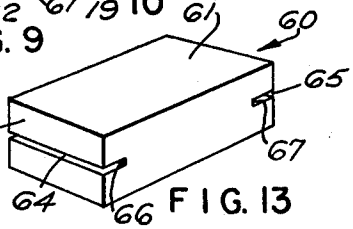


FIG. 13

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CUSHIONING CONTAINER

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3 Claims. (Cl. 217—52)

ABSTRACT OF THE DISCLOSURE

A cushioning container comprising supporting walls folded with portions in overlapping relation with registering openings in the overlapping portions into which there is inserted a resilient compressible material which acts to hold the overlapping walls in position and also cushions any commodity placed in the container against shocks from impact and the like.

This invention relates to a package and more particularly to a container for some sort of a delicate or fragile piece of equipment which needs protection against impacts, vibrations, pressure and displacement, abrasion temperature extremes or similar conditions.

The invention consists in providing a resilient compressible material, such as a foamed plastic, at certain spaced locations or spots to engage the commodity which is placed in the container and to hold it against movement of any substantial extent in the container as well as protecting it from impacts, vibrations, pressure and so forth as recited above.

One of the objects of the invention is to provide resilient cushioning material at certain spot locations making unnecessary the use of a large amount of material over the entire inner surface and in fact serving better than were a complete lining of the material utilized.

Another object of the invention is to provide a simple means of holding the protecting material in place at the locations desired without the material shifting with relation to the wall on which it is placed.

Another object of the invention is to so shape the wall and material used for cushioning that the two may be locked in position one relative to the other without the need of any additional fastenings or adhesives.

Another object of the invention is to utilize the cushioning material for not only serving as its cushioning function but also to serve as a means for locking walls of the container in right angular relation one to the other.

With these and other objects in view, the invention consists of certain novel features of construction as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

FIG. 1 is a perspective view of a container equipped with the cushioning means of this invention and showing in exploded relation thereto an article to be placed in the container;

FIG. 2 is a plan view showing sheet material in blank form before being folded into a container for an article;

FIGS. 3, 4, 5 and 6 are plan views showing the locking function of the resilient material for a corner in progressively different forms, FIG. 3 being a plan view of the cut bank; FIG. 4 being a view with one of the walls bent up into position; FIG. 5 being a view with two of the walls folded into position; and FIG. 6 being a view of the completed corner, all walls being locked in position by one of the cushioning units of the invention;

FIG. 7 is a plan view of a modified form of sheet material in blank form illustrating a different shape of opening for receiving a different shape of cushioning material;

FIG. 8 is a fragmental view on a larger scale illustrating a rectangular unit as inserted into one of the edge openings of the wall shown at FIG. 7;

FIG. 9 is a plan view of the parts shown in FIG. 8 folded into position;

FIG. 10 is a sectional view on line 10—10 of FIG. 9;

FIG. 11 is a perspective view of one of the units utilized in FIGS. 1 to 6;

FIG. 12 is a section on line 12—12 of FIG. 11;

FIG. 13 is a perspective view of one of the units utilized in FIGS. 7 to 10; and

FIG. 14 is a perspective view of a still further modified unit which may be used in the construction of FIGS. 7 to 10.

In proceeding with this invention, a corrugated cardboard wall structure is utilized in which there is provided an opening with a foam resilient compressible unit placed in the opening and protruding from both sides of the wall so as to engage the article in the container and cushion it against shocks or vibrations which might occur during shipping or in storage under certain conditions. The cushioning unit may be of polyethylene foam and the relative shape of the opening and the unit to be inserted therein may have many various forms. The cushioning unit usually is provided with a slit along its edge to receive the marginal edge of the wall opening to hold it in position.

In FIGS. 1 to 6 I have illustrated one shape of opening and unit to be positioned therein, while in FIGS. 7 to 10 a different shape opening is utilized and there may be other shapes which may be provided following the teachings of this invention.

In FIG. 2 there is shown a cutout cardboard blank designated generally **10** with dotted lines indicated at **11** for folding parts at right angles to enable the blank to be folded up into a container designated generally **12** in FIG. 1. Thus, there is provided a rectangular bottom **15** within the rectangular dotted line in the center of the blank shown in FIG. 1 with opposite side walls **16** extending upwardly therefrom in parallel relation and end walls **17** likewise extending upwardly therefrom in parallel relation and bridging the ends of the walls **16**, such folding being enabled by reason of slots **18** at the ends of the wall **16** separating the side walls from the end flaps **19** which are joined to the ends of the end wall **17** along score lines **20** so that these flaps may extend along the surface of the wall **16** as shown in FIG. 1.

A plurality of openings **25** are provided in the walls mentioned, each of generally circular shape with flattened portions **26** and **27** diametrically opposite each other along a chord of the circle to provide the shape of opening **25** illustrated more clearly in FIG. 2. There are three such openings in the bottom wall **15**, three such openings in each side wall **16**, while there is one such opening at the mid-portion of each end wall **17**. The openings **30** in the flaps **19** are also generally circular with a single flat bottom or chord **31** which flat portion **31** is so located that it will correspond with a flat portion **32** of one of the end openings in the side wall when the flap is folded into the position shown in FIG. 1.

Cushioning inserts of a shape shown at **35** in FIG. 11 are provided for the opening such as **25** above mentioned. Each of these units **35** is cylindrical in form and of a generally foam-like structure such as may be formed from polyethylene foam and has ends **36** and **37** at the ends of a generally cylindrical body and a cylindrical side wall **38** which is oppositely slit as at **39** and **40** to a slot bottom **41** and **42** at diametrically opposite points substantially midway between the ends **36** and **37**. This polyethylene foam may be compressed in the hand to a substantial extent and then will return to its normal size and shape. The bottom of the slots **39** and **40** desig-

nated as **42** and **42** are a distance apart a little greater than the distance between the straight flat portions **26** and **27** which form the margins of the opening **25**. For insertion of the unit **35** into the opening **25** the unit is compressed until it may be passed into the openings **25** between the flat edges **26** and **27** and then with the flat edges located opposite the slots **39** and **40** the unit is released and permitted to expand so that the parts of the unit on the opposite sides of the slots **39** and **40** extend over the margins of the opening **25** at the points **26** and **27**, thus locating one of the units **35** in its opening **25** and by reason of the dimensions of the flats **26** and **27** being a little closer together than the bottom of the slots **41** and **42** the portion between the bottom of the slots **41** and **42** will be held under compression when the unit is in the opening **25**, thus resiliently locking the unit in the opening against endwise or rotary movement, and as the slots are about midway of the unit, the ends **36** and **37** will protrude beyond the walls in which they are located about equal amounts.

After the units **35** are positioned in each of the openings **25**, the side walls **16** will be folded up along the score lines shown at **11** in dotted lines in FIG. 2, and the ends will be similarly folded up so that both side and end walls extend at substantially right angles to the bottom **15**. The flaps **19** will then be folded along the dotted score line **20** so as to approach the position shown at FIG. 1. However, the end unit at this time in assembly, designated as **35***a*, will be compressed again along one side distant from the end **17** sufficiently so that the flat portion **31** may pass over it and then it is allowed to expand again so that the flat portion **31** will also be located in one of the slots of the unit, thus locking the flap **19** in its right angular relation to both the bottom wall and the end wall to which it is hinged by the score line **20** and also locking the three walls in substantially their right angular relation by reason of the single unit **35***a*.

This corner relation is further illustrated in FIGS. 3, 4, 5 and 6, wherein in FIG. 3 a blank is shown divided into sections by score lines shown dotted. One section **40** is connected to a section **41** by the fold line **42** and connected to the section **43** by a fold line **44**, while a fourth section **45** is connected to the section **43** by the fold line **46** and separated from section **41** by a slot **47**. In this case the locking relation is shown by means of a single cushioning unit **35** being positioned in opening **49** in the seution **41** as explained above. In FIG. 4 this section **41** is folded up along the score line **42** to be at right angles to the section **40**, whereas in FIG. 5 the sections **43** and **45** are also folded up to be at right angles to the section **40** and also at right angles to the section **41**, this being accomplished by folding along the score line **44**. In FIG. 6 the further step is provided of folding the section **45** along the score line **46** to be at right angles to the section **43** and also at right angles to the section **40**, while the opening **50** having a flat portion **51** is positioned over the unit **35** which is positioned in the opening **49** in a manner similar to the positioning of the unit **35** in the opening **25** and then this opening **50** is also caused to receive the unit **35** by compressing it and then allowing it to expand so that the flat portion **51** is located in the slot in the unit **35**. Thus all of the parts are held in their right angular relation by the cushion unit **35**. Additional cushion units may be positioned in the openings in the sections **40** and **43** as will be readily apparent.

In FIGS. 7, 8, 9, 10 and 13 modified shapes are shown. The bottom, sides and ends are given numerals corresponding to the showing in FIG. 2. The openings **25** in this

case will receive cushion units **35** shown in FIG. 11 as set forth above.

Openings **55** will be provided in the edges of the side walls **16** and also in the edges of the end walls **17** and will receive the unit **60**. Unit **60** is provided with ends **61** and **62** and sides **63** which are oppositely slotted as at **64** and **65** to a depth having bottoms **66** and **67**. The openings **55** are generally rectangular in shape but are provided with tapered projections **68** which as the unit **60** is forced into the openings **55** will compress the bottoms **66** and **67** of the slots **64** and **65** so as to take on the form substantially as shown in the section portion of FIG. 10. Thus, these cushion units **60** are securely held in the slot or openings **55** provided in the side and end walls. Openings **70** are also provided in the flaps **19** which will lock with the unit **60** as shown in FIG. 9 so as to hold the walls in a right angular relation desired.

In some cases a unit such as shown at **80** may be provided in which in addition to the rectangular structure such as shown in FIG. 13 there is an end projection **81** extending therefrom. This unit would be positioned with the projection **81** extending inwardly of the container so as to serve to engage some special forms of article to be retained therein.

The container shown in FIG. 1 may receive an article **85** shown in FIG. 1 with the inner ends of the cushion units **35** contacting the article **85**. This container with article therein may then be placed in another or outer container of plane form with the outer ends of the cushion units in contact therewith. In a similar manner the modified unit of FIG. 7 may be used.

I claim:

1. A cushioning container having a wall with an opening therein, a second wall overlapping the first wall, said second wall having a second opening therein, said openings being in substantial registry, a resiliently compressible cushioning unit having ends and sides with a slot in one side, the margins of the wall surrounding said openings being of a size and shape relative to said unit so as to have a portion of the margins extend into the slot of the unit to lock both the unit and both walls in position with the ends of the unit protruding on opposite sides of the walls, one of said walls having additional openings spaced from the said registering openings and additional cushioning units with slots in the side similarly positioned in said additional openings and protruding on opposite sides of the wall to function as a cushion for an article in said container.

2. A cushioning container as in claim **1** wherein the margin of the wall surrounding an opening is provided with a projection to indent the wall of the slot of said unit to lock therewith.

3. A cushioning container as in claim **1** wherein the slots extend inwardly from opposite sides of the unit.

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RAPHAEL H. SCHWARTZ, *Primary Examiner.*