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COMPARTMENTALIZED CONTAINER

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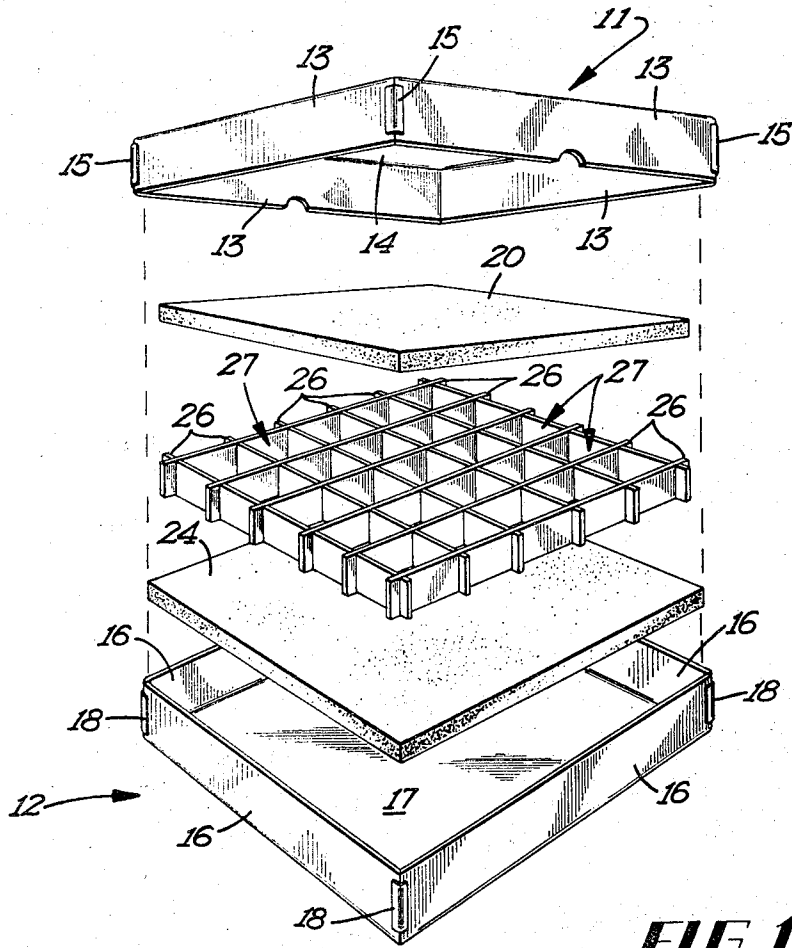


FIG 1

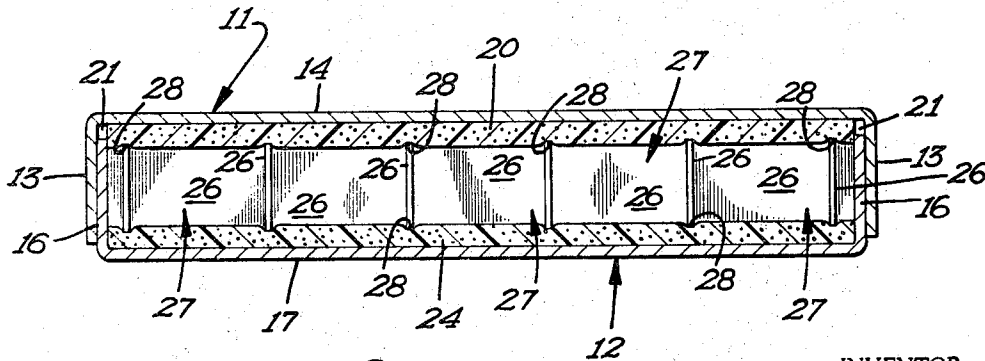


FIG 2

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COMPARTMENTALIZED CONTAINER

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6 Claims

ABSTRACT OF THE DISCLOSURE

This invention relates to a waterproof, dustproof, non-abrasive compartmentalized container for fragile articles. A layer of closed-cell resilient material, such as foamed polyurethane, is disposed in compressive engagement with the upper and lower edges of a plurality of dividers to thereby define a plurality of waterproof, dustproof, and nonabrasive compartments for various fragile articles.

Background of the invention

The invention pertains to the field of protective compartmentalized containers for fragile articles. More particularly, the invention relates to such containers wherein a plurality of compartments is defined by a plurality of dividers compressively engaged at their upper and lower edges by a layer of closed-cell resilient material.

In the prior art various compartmentalized containers have been proposed. Dividers have long been used in association with an enclosure means of some kind, to thereby define a plurality of compartments for use in packaging various articles. Such compartmentalized containers have not been designed to provide a plurality of compartments which are dustproof, waterproof, and nonabrasive. The prior art has typically included a plurality of dividers engaged rather loosely at the upper and lower edges thereof to form compartments which lack the protective features of the compartments of the present invention. More particularly, such compartmentalized containers of the prior art have not provided a waterproof and dustproof compressive engagement between the dividers and the sheet material placed in engagement with the upper and lower edges thereof.

Summary of the invention

The present invention solves the problems previously existent in the prior art by providing a layer of closed-cell resilient material in compressive engagement with the upper and lower edges of dividers to provide compartments which are waterproof and dustproof. In addition, the resilient material in engagement with the upper and lower edges provides a nonabrasive, relatively flexible surface which, along with nonabrasive dividers, provides a compartment which is suitable for the shipment of fragile goods. Thus, articles placed in the various compartments of the present invention are protected from water damage, dust damage, vibration damage, and impact forces.

In the preferred embodiment of the invention, an upper enclosure means having a top portion and closed side walls perpendicular to the top portion and contiguous therewith, and a lower enclosure means having a bottom portion and closed side walls perpendicular to the bottom portion contiguous therewith and adapted for complementary engagement with the side walls of the upper enclosure means are provided. An upper layer of resilient material is disposed within the side walls of the upper enclosure means and extends over substantially the entire interior surface of the top portion of the upper enclosure means. A lower layer of resilient material disposed within the side walls of the lower enclosure means and extending over substantially the entire interior surface of the bottom portion of the

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lower enclosure means is also provided. In an assembled container, a plurality of dividers is disposed between the upper and lower layers of resilient material to define a plurality of compartments. The dividers have a height sufficient to compressively engage the upper and lower layers of resilient material when the upper enclosure means complementarily engages the lower enclosure means.

It is an object of the present invention to provide a container having a plurality of waterproof, dustproof, and nonabrasive protective compartments for packaging fragile articles.

Description of the drawings

FIGURE 1 is an exploded perspective view of the preferred embodiment of the container which comprises the present invention; and

FIGURE 2 is a vertical sectional view of the container in the closed position.

Description of the preferred embodiment

The construction of the preferred embodiment of the present invention may be best understood with reference first to FIGURE 1. The invention includes an upper enclosure means 11 and a lower enclosure means 12. Upper enclosure means 11 is formed of sheet material such as corrugated box board and includes side walls 13 formed integrally with top portion 14. Side walls 13 are perpendicular to top portion 14, are contiguous therewith, and are closed at the corners thereof by means of corner securing means 15.

Lower enclosure means 12 is similar to upper enclosure means 11 and includes integral side walls 16 formed contiguously with top portion 17. Side walls 16 are perpendicular to top portion 17 and closed at the corners thereof by means of corner securing means 18.

Side walls 16 of lower enclosure means 12 are adapted to complementarily engage side walls 13 of upper enclosure means 11, as best seen in FIGURE 2. More particularly, side walls 16 of lower enclosure means 12 are adapted to engage side walls 13 of upper enclosure 11 with the outer surface of side walls 16 in engagement with the inner surface of side walls 13. Thus, side walls 16 and side walls 13 of lower enclosure means 12 and upper enclosure means 11, respectively, are adapted for complementary side by side engagement.

An upper layer of resilient material 20 is disposed within side walls 13 of upper enclosure means 11 and extends over substantially the entire inner surface of top portion 14. Resilient material 20 has a substantially uniform thickness and the thickness is substantially less than the height of side walls 13 of upper enclosure means 11. It should be noted that resilient material 20 is formed with its perimeter spaced inwardly from side walls 13 a distance substantially equal to the thickness of side walls 16 of lower enclosure means 12, as shown at reference numeral 21 in FIGURE 2. Thus, with lower enclosure means 12 in complementary engagement with upper enclosure means 11, side walls 16 may be seated between side walls 13 of upper enclosure means 11 and the perimeter of resilient material 20. Resilient material 20 is, accordingly, free to be seated within side walls 16 to thereby provide for sealing of the container compartments, as will be more particularly described below.

A lower layer of resilient material 24 is disposed within side walls 16 of lower enclosure means 12 and extends over substantially the entire interior surface of bottom portion 17. Resilient material 24, like resilient material 20, has a substantially uniform thickness and the thickness is substantially less than the height of side walls 16 of lower enclosure means 12.

Both resilient material 20 and resilient material 24 may be formed of a variety of substances, the primary consid-

eration being that the substance provide the necessary resiliency and be impermeable to water and dust. Any closed-cell resilient material may be used with the preferred substance being foamed polyurethane.

Resilient material 20 is preferably secured to top portion 14 of upper enclosure means 11 by means of an adhesive. Likewise resilient material 24 is also preferably secured to bottom portion 17 of lower enclosure means 12 by means of an adhesive. Thus the removal of upper enclosure means 11 from complementary engagement with lower enclosure means 12 insures the simultaneous removal of resilient material 20 from engagement with the upper edges of dividers 26. The same is true with respect to resilient material 24, when dividers 26, hereinafter described, are removed from lower enclosure means 12.

A plurality of dividers or divider strips 26 is disposed between the upper layer of resilient material 20 and the lower layer of resilient material 24. Each of the dividers 26 are disposed substantially perpendicularly to top portion 14 and bottom portion 17 of upper enclosure means 11 and lower enclosure means 12, respectively, and are notched in the customary manner to form a conventional grid-like relationship, shown in FIGURE 1, so as to define therebetween a plurality of compartments 27. Dividers 26 have a height sufficient to compressively engage resilient material 20 and resilient material 24 when upper enclosure means 11 complementarily engages lower enclosure means 12, as shown in FIGURE 2. More particularly, when upper enclosure means 11 is in complementary engagement with lower enclosure means 12, both resilient material 20 and resilient material 24 are forced into compressive engagement with the upper and lower edges, respectively, of dividers 26 as illustrated by indentations 28, seen in FIGURE 2. Thus, resilient material 20 and resilient material 24 seal the upper and lower edges, respectively, of dividers 26 to thereby insure that compartments 27 are protected from the entry of dust and water as well as other substances.

Dividers 26 may be formed of a variety of substances, the primary consideration being that the substance is chemically inert, water impermeable, impermeable to dust, and nonabrasive. In the preferred embodiment, dividers 26 are formed of foamed polypropylene. They may also be formed, however, from fibrous material such as rigid paper products. Dividers 26 must have sufficient rigidity to compress resilient material 20 and 24 to form indentations illustrated at 28 in FIGURE 2, to insure that compartments 27 are properly sealed.

To insure proper sealing of compartments 27 when the container is closed, dividers 26 must be free to move with respect to side walls 16 of lower enclosure means 12. Accordingly, dividers 26 should be rather loosely placed within the confines of side walls 16 to allow for self-adjustment to properly compressively engage both upper resilient material 20 and lower resilient material 24.

A closure means such as an adhesive tape (not shown) may be provided to hold upper enclosure means 11 in complementary relationship with lower enclosure means 12, in the position shown in FIGURE 2.

It should be recognized that the nature of the complementary engagement of side walls 13 of upper enclosure means 11 with side walls 16 of lower enclosure means 12 may vary. For example, the lower edges of side walls 13 may abut the upper edges of side walls 16, although the overlapped complementary relationship, best seen in FIGURE 2, is preferred. Other variations may also be made from the form of the embodiment shown without departing from its scope. For example, the overall rectangular configuration of upper enclosure means 11 and lower enclosure means 12 may be discarded without departing from the scope of the invention and the upper enclosure means 11 and lower enclosure means 12 could be formed with a circular configuration or some irregular configuration, as desired, without departing from the scope of the

present invention. Likewise, the configuration of the compartments 27 formed by dividers 26 may also vary from the rectangular configuration shown and it should be recognized that the number and location of the dividers may vary considerably without departing from the scope of the attached claims.

Therefore it is clear that the invention may be embodied in other specific forms without departing from the spirit or central characteristics thereof. The present embodiment is thus to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

I claim:

1. A waterproof, dustproof and nonabrasive compartmentalized container for fragile articles comprising:

upper enclosure means having a top portion and closed side walls perpendicular to said top portion and contiguous therewith;

lower enclosure means having a bottom portion and closed side walls perpendicular to said bottom portion, contiguous therewith, and adapted for complementary engagement with said side walls of said upper enclosure means;

an upper layer of resilient and compressible cellular material disposed within said side walls of said upper enclosure means and extending over substantially the entire interior surface of said top portion thereof and having a substantially uniform thickness;

a lower layer of resilient and compressible cellular material disposed within said side walls of said lower enclosure means and extending over substantially the entire interior surface of said bottom and having substantially uniform thickness;

a plurality of dividers disposed between said upper and said lower layers of resilient and compressible cellular material and arranged to define a plurality of compartments, said dividers having a height sufficient to compressively engage said upper and lower layers when said upper enclosure means complementarily engage said lower enclosure means.

2. The container of claim 1 wherein said upper layer is secured to said top portion of said upper enclosure means and said lower layer is secured to said bottom portion of said lower enclosure means.

3. The container of claim 2 wherein said side walls of said upper and said lower enclosure means are adapted for complementary engagement with the outer surface of said side walls of said lower enclosure means in engagement with the inner surface of said side walls of said upper enclosure means.

4. The container of claim 3 wherein the perimeter of said upper layer is spaced inwardly a distance from said side walls of said upper enclosure means a distance substantially equal to the thickness of said side walls of said lower enclosure means.

5. The container of claim 4 wherein said upper layer and said lower layer is formed from foamed polyurethane.

6. The container of claim 4 wherein said dividers are formed from foamed polypropylene.

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