

May 22, 1945.

K. H. DITTMANN

2,376,530

RECEPTACLE

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Fig. 1

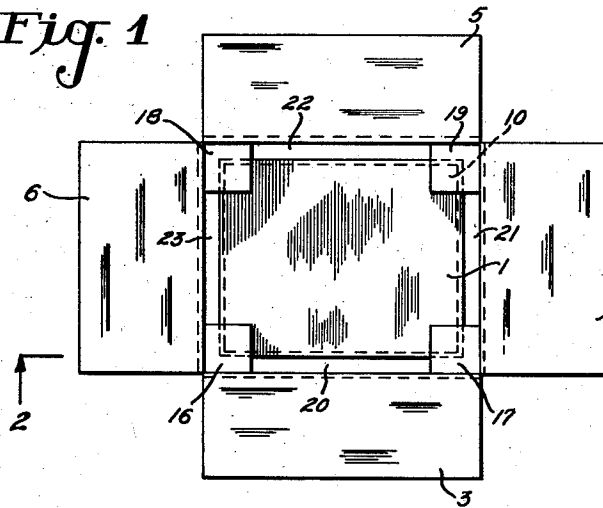


Fig. 4

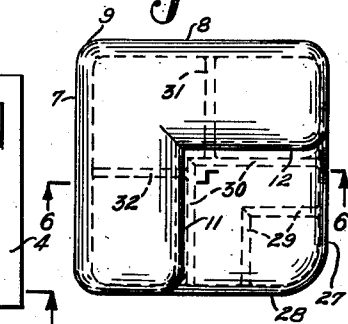


Fig. 2

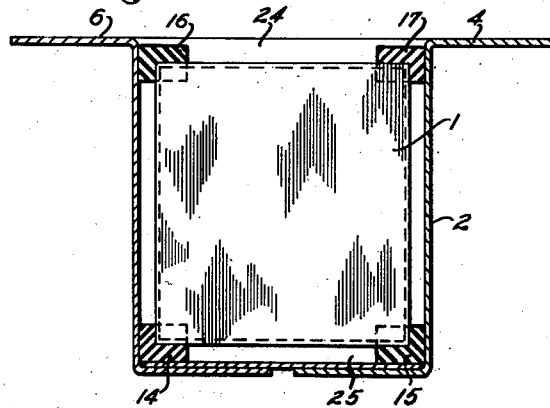


Fig. 5

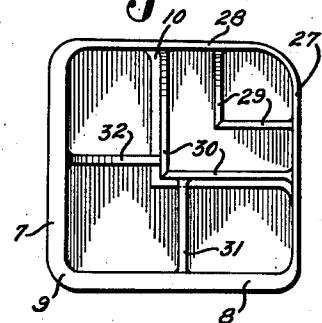


Fig. 3

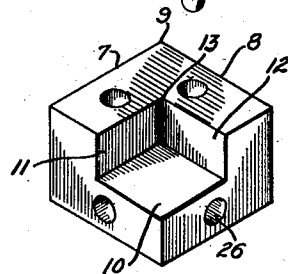
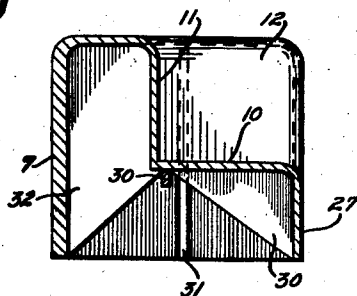


Fig. 6



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RECEPTACLE

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Application February 24, 1944, Serial No. 523,627

2 Claims. (Cl. 229-14)

This invention relates in general to receptacles and more particularly to shipping cartons, or packages, and has for its primary object to provide such a construction that will insure the universal suspension and shock and vibration absorption of the contained article so that no shocks or vibrations imparted to the package will be transmitted to the article.

Departing from the conventional practice of employing sponge rubber pads or folded cardboard for the top and bottom of the container, the present invention concerns itself with the universal suspension and shock absorption means within the container for the article to be shipped. In short, it contemplates the packing of the article within a small inner container and the suspension of the latter within an outer container. Its particular adaptability and importance is in connection with delicate articles such as watches, clocks and high precision instruments such as flight instruments, automatic pilot units and the like, wherein slight jars, vibrations and shocks may readily cause misalignment, wear, breakage or other damage sufficient to necessitate replacement or repair. Accordingly, it is proposed, in connection with a six sided container, for instance, to provide eight separate corner pieces of soft sponge or molded or fabricated rubber, or the like, such as synthetic rubbers, as a shock absorbing means. Each of these shock absorbing corner pieces is fitted within one of the eight corners of the outer carton and is recessed to receive a corresponding corner of the inner carton in such a manner as to resiliently suspend the inner carton universally in predetermined spaced relationship with the outer carton. By this means, this construction and arrangement, any shock imparted to the outer carton, regardless of the direction in which it is imposed, is absorbed by the shock absorbing corner pieces that resiliently suspend the inner carton in complete spaced relationship with respect to the outer carton. Such a spaced suspension moreover acts as a prevention of moisture transfer from the exterior to the enclosed article.

With the foregoing and other objects in view, the invention resides in the combination of parts and in the details of construction hereinafter set forth in the following specification and appended claims, certain embodiments thereof being illustrated in the accompanying drawing, in which:

Figure 1 is a top plan view of the assembly showing the inner container suspended in spaced relationship with the outer container by the shock and vibration absorbing corner pieces and show-

ing the inner container suspended in spaced relationship with the outer container by the shock absorbing corner pieces and showing the upper lid of the outer carton open and folded outwardly.

Figure 2 is a view in section taken along line 2-2 of shock absorbing corner pieces;

Figure 3 is a view in perspective of one form of shock absorbing corner piece which is cored to increase flexibility;

Figure 4 is a top plan view of another form which is hollowed out with ribs;

Figure 5 is a bottom plan view of the form shown in Figure 4; and

Figure 6 is a view in section taken along line 6-6 of Figure 4.

Referring more particularly to the drawing, the article to be shipped may be inserted and packed within an inner container 1 which is shown as six sided, but which may be of cylindrical or any desired shape. The outer container 2 is symmetrically larger than the inner container and is shown with its top four flaps 3, 4, 5 and 6 open and folded outwardly.

As stated before, it is desired to universally suspend the inner container with a shock and vibration absorbing corner piece in spaced relationship on all sides with respect to the outer container. Such a corner piece is shown by way of example in Figure 3 and may be made of soft sponge rubber molded or fabricated, or the like, such as synthetic rubbers. The two outer angular faces 7 and 8 intersecting at the corner 9 correspond to the angularity of the inner corners of the outer container. The shock absorbing piece may also be provided with a cut-out portion including a ledge 10 and inner faces 11 and 12 intersecting at a point 13 to correspond with the outer corners of the inner carton.

In assembling the inner container within the outer container, the first step is to place four of the shock absorbing pieces in the four bottom corners of the outer container with the ledge 10 disposed inwardly and facing upwardly to receive the corresponding outside corner of the inner container carton. Two of such bottom corner pieces are shown at 14 and 15 in Figure 2. With the inner container resting on the four bottom corner pieces, four more pieces 16, 17, 18 and 19 are placed upside down to fit within the inside corners of the outer container and engage the outer edges of the inner container with each ledge 10 resting on top of these outer edges of the inner container. The inward folding of the flaps 3, 4, 5 and 6 and securing of them together completes the double container assembly.

As shown in Figures 1 and 2, this arrangement of the shock absorbing pads in each of the eight corners of the outer carton insures a complete spacing of the inner carton on all four sides as well as top and bottom. The four spaces on the four sides are indicated at 20, 21, 22 and 23, while the space at the top is indicated at 24 and the bottom at 25.

As an added feature of obtaining shock and vibration absorption it may be preferable to calculate the outer dimensions of the inner container and the inner dimensions of the outer container and so predetermine the size of the corner pads that upon closing the flaps of the outer container the four pads will be placed under slight compression. In this manner when the assembly is subjected to shock or vibration any tendency for rebound of the inner container from one pad in any direction will be opposed by the oppositely disposed pad, or pads. This will destroy any tendency to build up resonance or frequency of vibration of the inner container or the article contained therein.

Other specific forms, shapes and materials may be used in constructing the actual pads. For instance, while the form shown in Figure 3 is cored to include holes 26, certain flexible materials may be used which would dispense with the coring of the pads.

Figures 4, 5 and 6 show another form of pad the general over-all contour of which conforms to that shown in Figure 3 but which is hollowed out for added flexibility and reduced weight. In other words it still has the two side walls 7 and 8 intersecting in a corner 9 and also has a ledge 10. As seen in Figure 5, angular webs 29 and 30 extend between side walls 27 and 28 under ledge 10 and straight webs 31 and 32 extend between walls 7 and 11 and between walls 8 and 12 respectively. Such a construction tends toward greater flexibility and the hollow under surface also provides an air cushion.

The foregoing construction and arrangement, in addition to resiliently suspending the inner container universally for shock and vibration absorption, also spaces the two containers to lessen the likelihood of moisture transfer from the exterior to the article contained. It also

lessens the amount of shock absorbing material to be used. Moreover, the over-all weight and size of the cartons is materially lessened.

I claim:

1. A shipping container assembly comprising a six-sided inner container for containing an article to be shipped, an outer container of larger and symmetrical proportions to receive said inner container, shock and vibration absorbing means for universally suspending said inner container in spaced relationship with said outer container, said shock absorbing means comprising a plurality of pads, each of said pads being made of molded rubber of rectangular shape and thickness each to fit in each and all of the eight inside corners of the outer container and each preformed to have its inner face recessed to provide a cut-out portion in one corner thereof to provide sidewalls and a ledge to receive and support each and all of the eight outside corners of said inner container to suspend and support the inner container against movement relative to said outer container except such movement as may be brought about by the compression of said pads.
2. A shipping container assembly comprising a six-sided inner container for containing an article to be shipped, an outer container of larger and symmetrical proportions to receive said inner container, shock and vibration absorbing means for universally suspending said inner container in spaced relationship with said outer container, said shock absorbing means comprising a plurality of pads, each of said pads being made of molded rubber of rectangular shape and thickness each to fit in each and all of the eight inside corners of the outer container and each preformed to have its inner face recessed to provide a cut-out portion in one corner thereof to provide sidewalls and a ledge to receive and support each and all of the eight outside corners of said inner container to suspend and support the inner container against movement relative to said outer container, except such movement as may be brought about by the compression of said pads, said pads being pre-compressed between said inner and outer container upon the closing of said outer container.

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