Aug. 15, 1950 S. T. V. COWEN ET AL 2,518,450

CUSHIONED PACKAGE OF FRAGILE ARTICLES

Filed Nov. 8, 1944

FIG. 1.

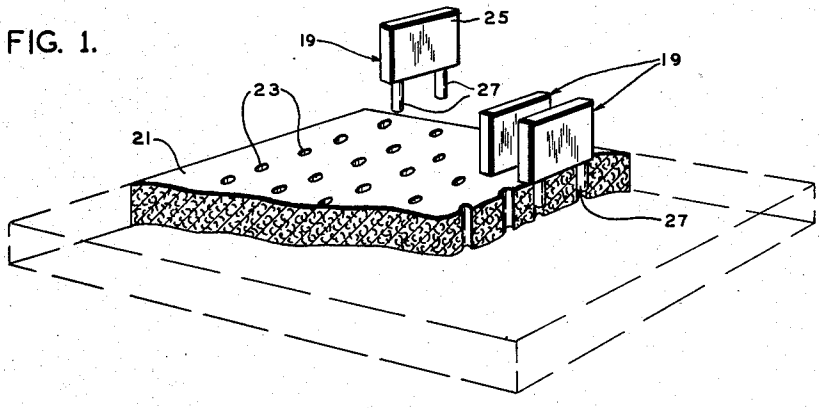
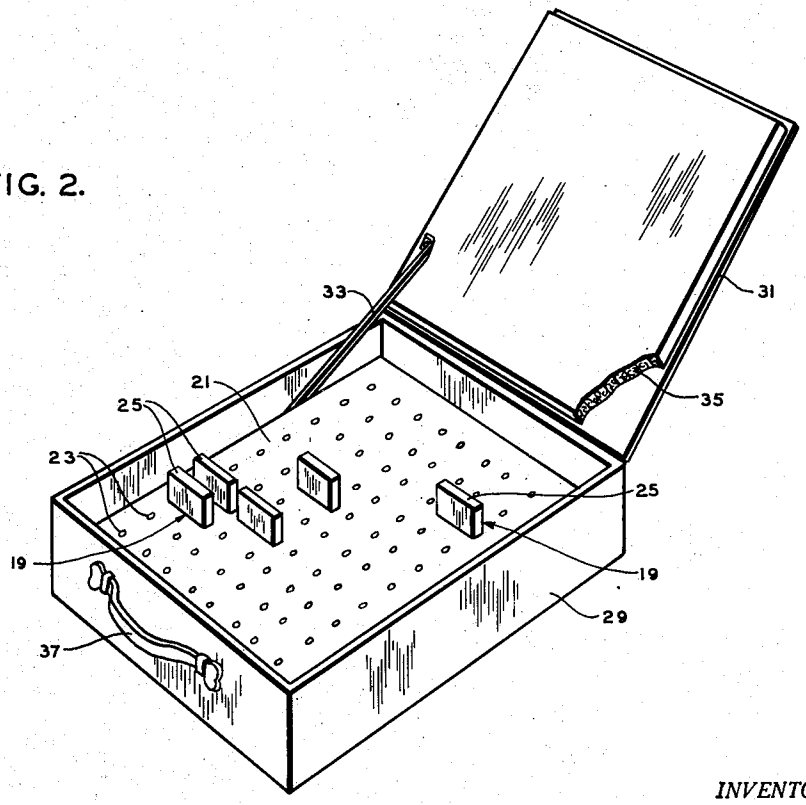


FIG. 2.



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CUSHIONED PACKAGE OF FRAGILE ARTICLES

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1 Claim. (Cl. 206—65)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to us of any royalty thereon.

This invention relates to improvements in receptacles.

In packaging sensitive devices, it is frequently desirable to pack them as compactly as possible and still fully protect them against vibration and against damage due to hitting against the package itself and against other devices packed with them. As may be readily appreciated the problem is particularly acute with such breakable equipment as electronic vacuum tubes and the like.

One item of equipment which is used in tremendous quantities today and which particularly demands means for safe transportation and storage is the crystal used in some electronic apparatus. These crystals are enclosed in small holders, having two terminal prongs projecting therefrom.

In packaging a plurality of such devices in a single container, the practice has been to leave sufficient space between adjacent devices so that one or more may be grasped and removed as needed, the space so left being more than would be requisite merely to keep them from hitting each other or the container due to vibration, etc.

It is, therefore, an object of the present invention to provide an improved receptacle to package delicate devices and the like.

It is another object to provide such a receptacle which will securely sustain such devices and protect them against movements, vibration, shock, etc.

It is another object to provide such a receptacle which will carry a plurality of devices in a minimum of space.

It is still another object to provide a container which will include means to allow ready removal of one or more of such devices, even though they be packaged too close together to be conveniently grasped.

It is another object to provide a container adapted to accommodate a plurality of layers of delicate devices, each layer accommodating a plurality of such devices.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claim, but the invention itself will best be understood by reference to the embodiment set forth in the following description taken in connection with the accompanying drawings, in which Figure 1 is a perspective view, partly cut away, of a crystal pad; and

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Figure 2 is a perspective view of said pad positioned in its carrying case.

The receptacle shown in the drawings is designed expressly for crystal holders 19, usable in electronic apparatus, each of which comprises a crystal hermetically sealed within a small rectangular envelope 25, of glass or the like, and is provided with two terminal prongs 27 extending therefrom. There is provided a thick pad 21 of felt or like material in which are punched a plurality of pairs of vertically disposed holes 23, each pair being adapted to receive the two terminal prongs 27 of a crystal holder 19.

The holes 23 are of slightly smaller diameter than the terminal prongs 27 so as to make a tight fit therewith. The felt 21 is of greater thickness than the length of said terminal prongs 27 so that when said prongs are in place they do not extend completely through the felt. The pairs of holes 23 may be so close to adjacent pairs that only sufficient space is left between envelopes 25 of adjacent crystal holders 19 to keep them from hitting each other during transportation and storage.

There is also provided a rectangular box 29, of wood or other suitable material, which may be provided with a carrying handle 37. The cover 31 of said box 29 is hingeably secured thereto and may be provided with a lazy strap 33. The inner surface of the cover 31 has secured to it a layer 35 of felt or the like.

In using the packaging means just described, the terminal prongs 27 of a plurality of crystal holders 19 are inserted into the holes 23 of the felt pad 21 until the envelopes 25 thereof rest upon the upper surface of said pad. Said pad 21 is placed into the box 29 and the cover 31 is closed. The felt layer 35 presses down upon the top surfaces of said envelopes 25.

When so packaged, the crystal holders 19 are protected from any amount of vibration, shock, movement, etc., which they may be expected to sustain. In view of the fact that they are positioned in the holes 23 and are firmly wedged between the felt pad 21 and the felt layer 35, they may be very close together and still will not hit each other despite extreme vibrations and movements. In order to remove the crystal holders 19, the felt pad 21 is removed from the box 29 whereupon the pad may be bent and the crystal holders spread apart sufficiently to allow one or more to be withdrawn from the holes 23.

Although, in the illustrated embodiment, but

one pad 21 is shown, it is obvious that the box may be made with sufficient depth to house any number of pads, one above the other. The lower surface of each pad 21 rests upon the upper surfaces of the crystal holders 19 of the layer below it.

The present invention may be applied to packaging various devices. For instance, it is particularly well adapted for vacuum tubes. A pad may be drilled to receive the tubes upright, that is, with the terminal prongs extending downward into the pad. For such arrangement, there may be either a plurality of individual holes to receive the several prongs or a single larger hole to receive the prongs as a group. Again, where the glass or metal envelope of the tube is of greater diameter than the base, the holes in the pad may be sufficiently deep and large to receive the entire tube base. Where the tube base is of greater diameter than the tube envelope, the tube may be positioned in the pad upside down, the hole being of a size to receive only the envelope, so that the tube base and terminal prongs remain above the upper surface of the pad.

We claim:

In combination, a plurality of devices, each of which devices includes a body portion and at least one prong portion; and a receptacle for said devices, which receptacle includes a container, a pad of flexible and resilient material removably disposed within said container, said pad being provided with a plurality of holes, each of which holes is receivable respectively to one of said prong portions and is of a cross sectional size so as to resiliently grip one of said prong portions positioned therein, said pad being thicker than the length of said prong portions, a cover for said container, and a layer of resilient material secured to said cover, which layer, when said cover is closed, is substantially parallel to said pad and presses upon the body portions of devices having their prongs positioned in said holes; so that, when said cover is open, said devices may be sustained solely by said pad, and so that said pad may be readily removed from the container and distorted to cause an increase in the spacing between the body portions of adjacent devices to allow removal of said devices which, when the pad is positioned within the container, are too close together for easy removal.

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