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TOOL AND DISPLAY BOX

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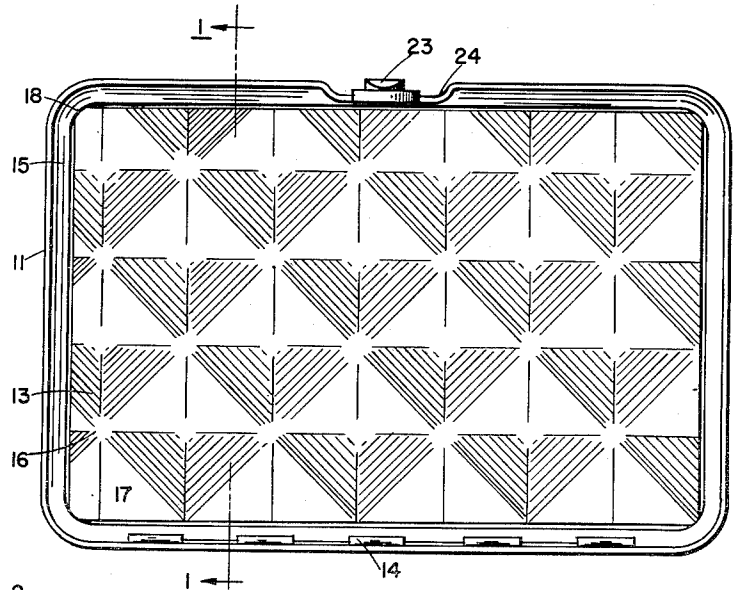


FIG. 2

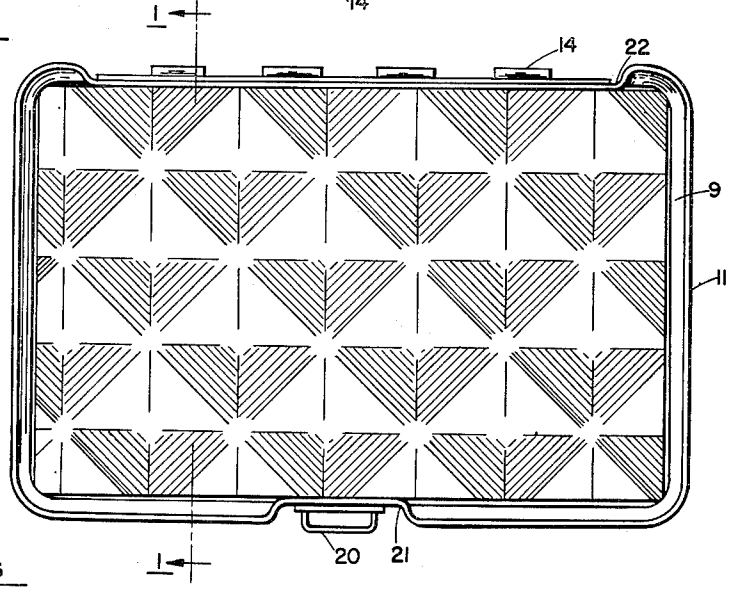


FIG. 3

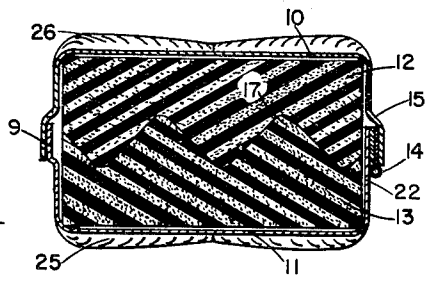


FIG. 1

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TOOL AND DISPLAY BOX

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The present invention concerns a tool and display box. More particularly, the invention is directed to a container or box for protectively holding precision tools, delicate instruments and similar devices.

Heretofore the protection of precision tools has been accomplished by designing and constructing special boxes having particular cut-out nesting portions conforming to the exterior shape of each tool. These nesting portions are generally covered with felt or other padding for protective purposes. Thus, it is seen that it has been necessary to provide a custom built box for each device or tool. For a manufacturing company in which special tools are continually being developed the making of these custom boxes is expensive and time consuming. The boxes are not generally reusable and to a large degree do not protect the tool in a fully satisfactory manner. Particularly during shipping and other rough handling the tools are subjected to movement which can be damaging to the tools. Further, the prior art boxes are of odd sizes and shapes which make for much difficulty in stacking and handling. The presently described box is a universal box for all types of tools, instruments and other devices wherein the tools are laid in troughs formed by protrusions extending from a highly compressible pad held in the top and bottom sections of a two-part box. The protrusions act to not only provide an energy absorbing mass which is compressible about the tool or tools upon shutting of the box affording high shock protection but also prevent rolling of the tools or instruments when the box is open. In the open position tools of various sizes and shapes may be conveniently and pleasingly displayed and thereafter securely held in the closed position. For example, an elongated tool may be laid with respect to the vertical front section of the box either horizontally, vertically or on the slant between the protrusions. The present tool box contains additional features with respect to the particular shape of the protrusions, the provision of curved corners on the box which cooperate with square corners on the inserted compressible pads and act to hold such pads within the box during handling, and cooperating telescoping rims and indented portions for providing box rigidity, tightness and recessing of box hardware.

An object of this invention is to provide a new and improved precision tool box.

A further object of this invention is to provide a precision tool box for positively holding and protecting tools of extreme variations of sizes and shapes.

A still further object of this invention is to provide a universal tool box in which interfitting or interfering protrusions extending from hinged halves of the box hold an inserted tool or instrument in place.

An additional object of this invention is to provide a tool box with highly resilient pads operably held within the box and having interfitting protrusions extending therefrom adapted to be compressed about inserted tools, instruments or similar devices.

The above objects as well as other objects of the invention will be apparent from the following description of the accompanying drawings in which:

FIG. 1 is a cross-sectional view of the box in a closed position taken on lines 1—1 of the top and bottom sections of the box shown separately in FIGS. 2 and 3;

FIG. 2 is a plan view looking at the inside of the top section of the box;

And FIG. 3 is a plan view looking at the inside of the bottom section.

The box shown in cross-section in FIG. 1 comprises a top section 10 hingedly connected by a hinge 14 to a bottom section 11. The top section 10 has a rim 15 extending completely therearound which is adapted to telescope over the top peripheral edges of the bottom section 11. The bottom section 11 has a rim 9 extending along the front surface and each of the sides and is connected with a vertical rear side 22 to which the hinge 14 is attached. Highly compressible cushioning pads 12 and 13 are held in the top and bottom sections 10 and 11, respectively. Each of the pads 12 and 13 include protrusions 17 thereon which interfit with each other forming undulating planes of contact throughout the entire juxtaposed surfaces of the pads 12 and 13. These protrusions may be pyramid-shaped as illustrated or other equivalent shape such as interfitting ovoids, diamonds or prisms. FIG. 2 is a view of the inside of the top section of the box in the open position. The highly compressible pad 13 contains a series of protrusions 17 having zenith points as indicated and nadir points 16 extending between four of the protrusions 17. The nadir points 16 thus form a series of troughs running slantwise with respect to the peripheral edges of the top section. To a lesser extent vertical and horizontal passageways are provided between the protrusions in planes parallel to the bottom and top surfaces of the box. The exterior walls of the box along with the ridge 15 are curved at each corner thereof as at 18. The inserted compressible pads preferably have square corners and are so dimensioned that the curved corners of the box compress the corners of the pad sufficiently to frictionally hold the pads within the various sections. Thus the box sections shown in FIGS. 2 and 3 may be held upside down and the pads will not drop out. This arrangement, however, allows the pad to be easily removed for replacement or cleaning, an advantage which would not be had if the pad were permanently bonded within its respective top or bottom section. An elongated hinge 14 is attached to the inner periphery of the rear edge of the box between the outer ridge 15 and the back vertical edge of the compressible pad. At the front vertical portion of the rim 15 a spring type or other fastener 23 is provided situated in a recess 24 extending approximately half the depth of the rim portion 15.

FIG. 3 is taken looking at the inside of the bottom section of the box whereby the hinge 14 is connected to a vertical rear wall 22 and wherein a latching loop 20 is provided in a front recess 21 of slightly greater depth than the height of said rim portion 9. Rim 9 extends outwardly from the sidewalls a lesser amount than rim 15, as clearly shown in FIG. 1, allowing telescoping or fitting of rim 15 over rim 9. The spring and latch combination 23 and 20 while forming no part of this invention by itself preferably consists of a tongue-like member which is slidable through the latching loop and has a spring pressed-outward latch button thereon which latches on the under side of the latching loop after the tongue has been inserted through the loop. Depression of the spring button allows the tongue to be withdrawn through the latching loop allowing the box to open. The recessing of all hardware on the box makes for ease in stacking and shipping, protects the hardware and minimizes accidental opening.

The peaks and valleys of the highly resilient pad placed in the bottom section are preferably juxtapositioned to the valleys and peaks, respectively, of the highly compressible pad in the top section such that the peaks of one interfit with the valleys of the other. Preferably a peak of one pad will nestle in the nadir point formed at an

equilateral distance from four protrusions on the juxtaposed cushioning pad.

The material forming the highly compressible pads may be foamed plastic such as flexible polyurethane or flexible polyvinyl chloride or rubber which is compressible down to approximately 20% of its original volume. The box itself is preferably made of a molded plastic material which has sufficient rigidity and impact strength to withstand handling and sufficient flexibility to withstand insertion of odd shaped tools or instruments. Thus, articles which have exterior dimensions only slightly smaller than the overall interior dimensions of the box itself may be placed within the box and accurately held in place by the compression of the foam around the parts. The inserted parts are held securely against shock, rattling and abrasion producing movement by the compression of the mass all around the surface of the parts.

Suitable ridges and/or depressions may be placed on the exterior surfaces of the box on the bottom section and top section, respectively, to provide a means for interlocking the boxes so that they may be vertically stacked preventing their toppling over during storage. These ridges may take the form of a series of single ridges 25 on the bottom surface and double parallel ridges 26, forming a groove into which a ridge 25 of another box may interfit, on the top exterior surface.

Although the invention has been described and illustrated in detail, it is to be clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of this invention being limited only by the terms of the appended claims.

We claim:

1. An internally cushioned box comprising a container having connectable top and bottom sections, a highly compressible cushioning pad in each of said sections, each of said pads having a series of undulating peak-like surface protrusions extending over substantially all of their juxtaposed facing surfaces intermeshing and forming undulating planes of contact when said box is closed, said protrusions on the bottom pad adapted to hold various inserted articles in various positions and said protrusions on each of said pads adapted to compress around said articles when the container is in a closed position.

2. The invention as set out in claim 1 in which the protrusions on the respective cushioning pads interfit in a closed position into a nadir formed at an equilateral distance from four protrusions on the juxtaposed cushioning pad.

3. The invention as set out in claim 1 in which said cushioning pads are rectangular and have square corners and wherein each of said top and bottom sections have curved corners frictionally holding said pads at the corners thereof.

4. An internally cushioned box comprising a container having connected top and bottom sections, a highly compressible cushioning pad in each of said sections, each of said pads having undulating surface protrusions on their juxtaposed facing surfaces intermeshing when said box is closed, said protrusions on the bottom pad adapted to hold inserted articles in various positions and said protrusions on each of said pads adapted to compress around said articles when the container is in a closed position, said protrusions being pyramid shape and forming slantwise troughs between adjoining peaks.

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