April 14, 1970 H. HAMPEL 3,506,321

INTERCONNECTED DETACHABLE BOXES

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Fig. 2

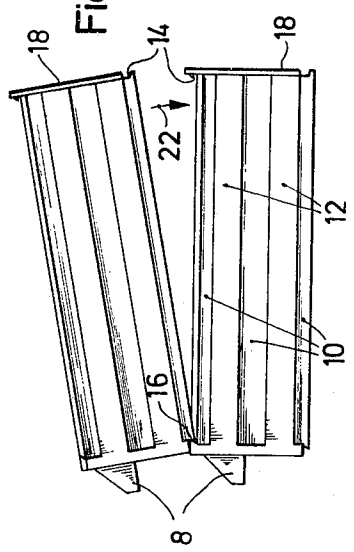


Fig. 3

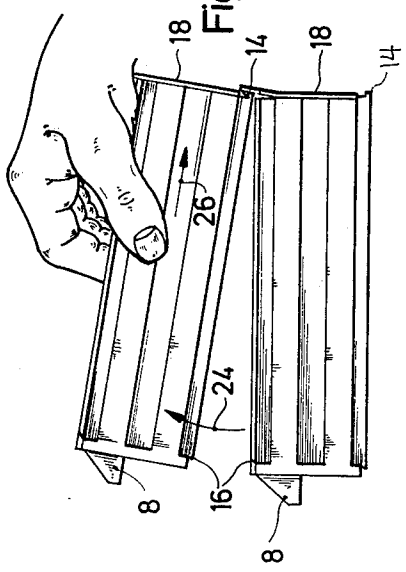


Fig. 4

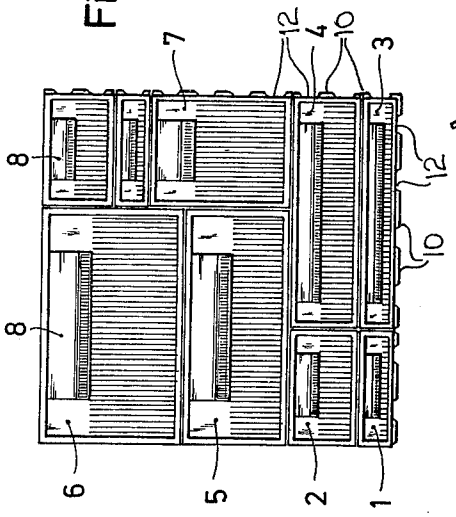
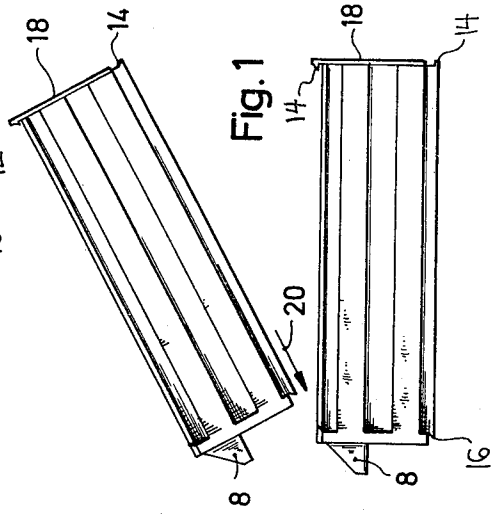


Fig. 1



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FIG. 5

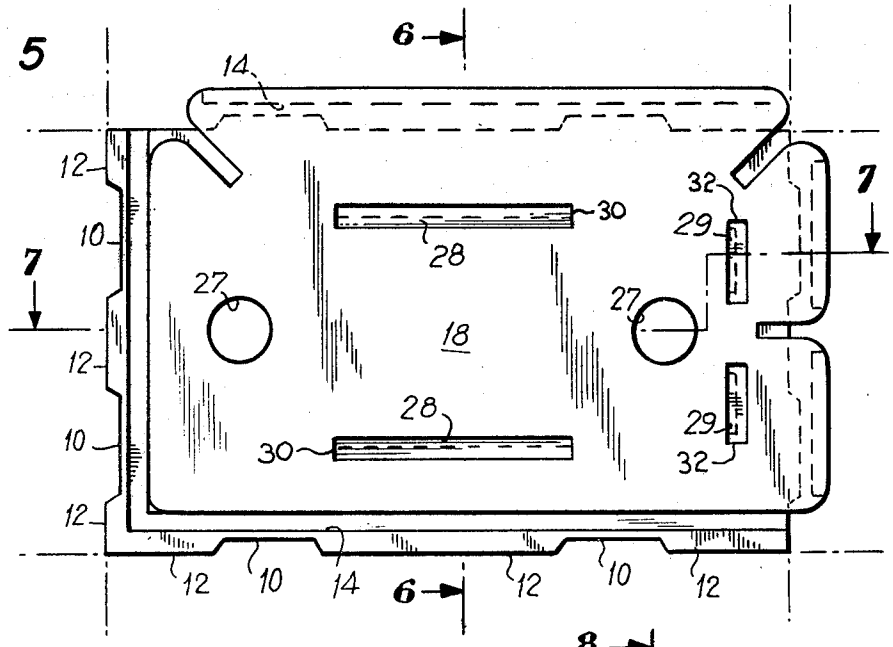
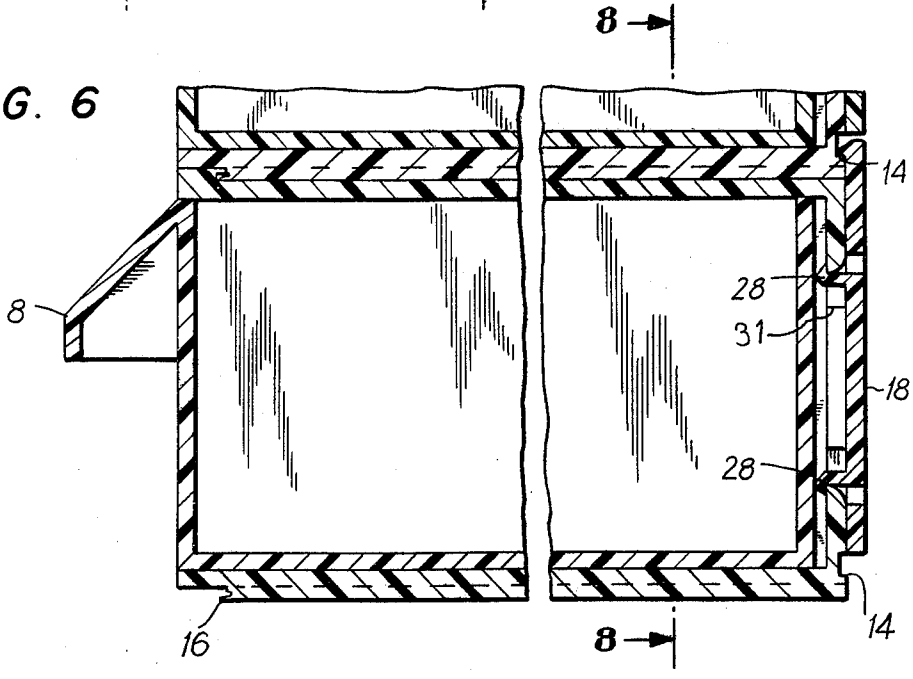


FIG. 6



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FIG. 7

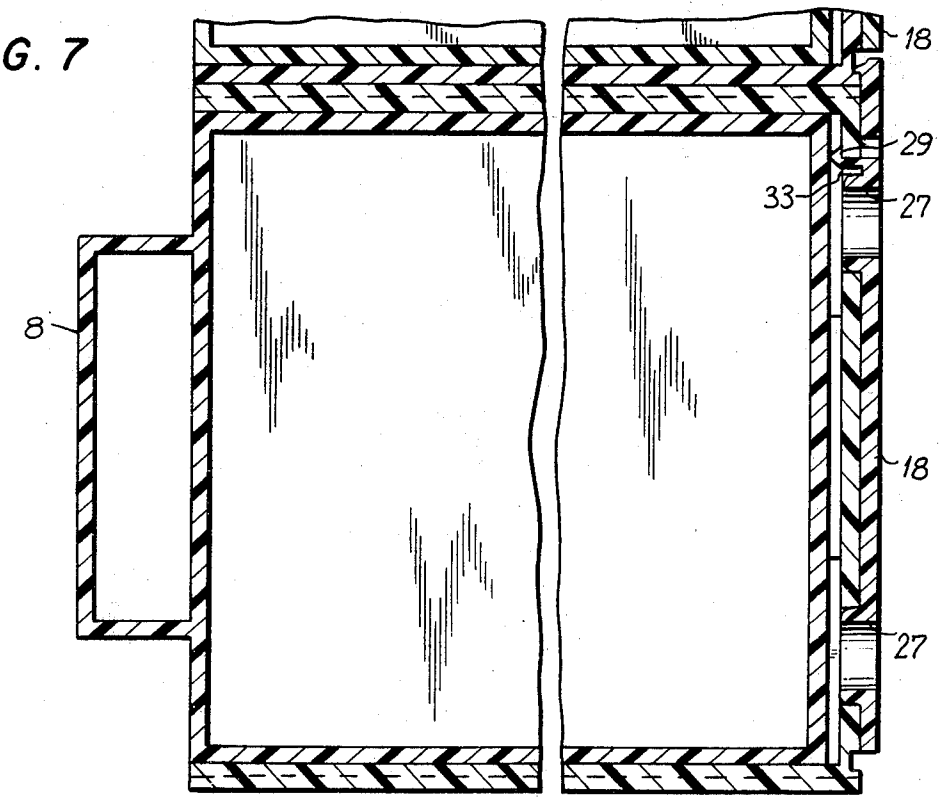
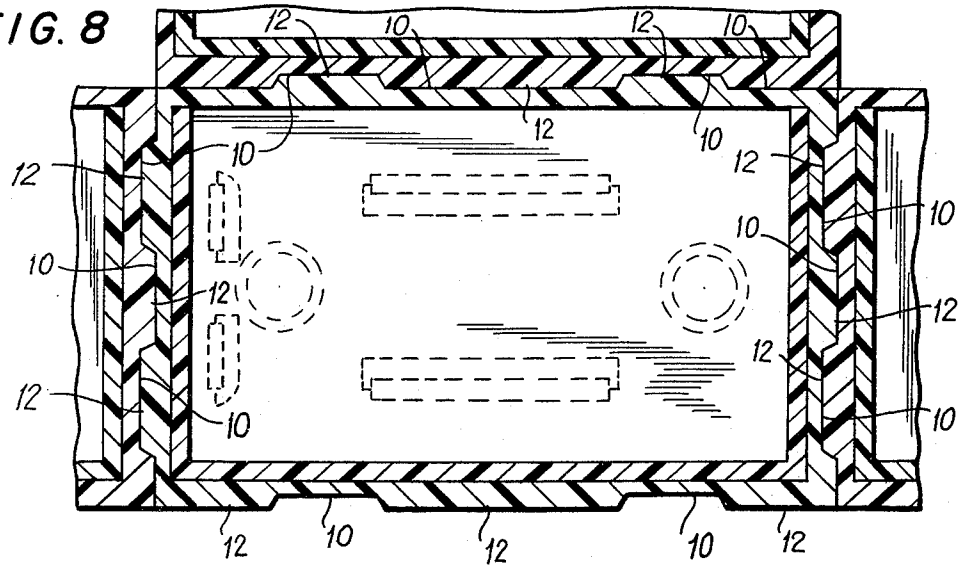


FIG. 8



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INTERCONNECTED DETACHABLE BOXES

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Int. Cl. A47b 87/00
U.S. Cl. 312—107 9 Claims

ABSTRACT OF THE DISCLOSURE

A box for multiple interlocking engagement of similar boxes having longitudinal profiles in its side walls and an elastic plate secured to its back wall so as to permit additional boxes having corresponding profiles to be engaged against the walls of the box. The elastic back plate also includes a notched cutout for engaging a corresponding cut out in a similar box so that when the boxes are stacked one above the other, the cutouts become interlocked to hold the boxes in rigid alignment.

This invention relates generally to rectangular boxes which may be detachably connected to each other for storing materials of different kinds which may either be slid and/or placed into these boxes. More specifically, the invention relates to a plurality of drawers made of plastic or the like, having side walls provided with corresponding interconnecting cutouts which when arranged keep walls of these boxes in place.

Boxes of this type usually serve to receive drawers wherein different types of parts may be stored, such as screws, nuts and other small items. When these types of parts are stored or warehoused, there is usually a need to conserve space by storing as many drawers as close to each other as possible. This may be accomplished by interconnecting drawers or boxes of different sizes together. When different types of materials are to be stored, it is often necessary to change a whole block of the previously interconnected drawers and boxes to adjust over to the new storing requirements. Therefore, these boxes must be detachably interconnected with each other.

Accordingly, the present invention solves this problem in a simple manner by providing an elastic plate on the back wall of the box which extends beyond the box wall and which is provided with cutouts or notches which engage corresponding cutouts of the box to be connected. A further pair of corresponding cutouts is provided vertically with respect to the plane of the plate at the level of the front face of the boxes. To assemble and/or disassemble th boxes, one simply bends back the elastic plate of one box with the edge of the other box, while the other end of the box disengages with the forward cutouts provided on the other box. If, in accordance with the invention, at least one corresponding longitudinal notch is provided vertically with respect to the plane of the plate of the box walls to be connected, that is, between the plate and the other pair of cutouts, the boxes are then elastically interconnected and cannot move with respect to each other.

It is to be understood that the plate may preferably extend beyond the adjacent box wall to be connected, so that an additional corresponding pair of notched cutouts can be provided. It has been found that plastics of acetal resins, such as "Delrin" are useful for the construction of the elastic plate. The plate and/or the boxes may be produced by injection molding processes. To increase its elasticity, the plate may be provided with slits at the area extending beyond the box walls. The plate may be attached to the back wall of the box by means of elastic lugs which engage corresponding cutouts in the box. It is also advantageous to form the pair of cutouts like saw teeth so as to provide a gap free engagement of the interconnected boxes.

It is therefore an object according to the present invention to provide detachable boxes which are easily interconnected for storing materials of different kinds.

It is another object according to the present invention to provide detachable boxes for the storage and warehousing of materials which are sufficiently strong when interconnected in any configuration.

It is a further object according to the present invention to provide interconnected detachable boxes which are inexpensive to manufacture, easy to assemble, and reliable in use.

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawings, which disclose one embodiment of the present invention. It should be understood, however, that the drawings are designed for the purpose of illustration only, and not as a definition of the limits of the invention.

In the drawings, wherein similar reference characters denote similar elements throughout the several views:

FIGS. 1–3 show two boxes which illustrate the assembly and disassembly of two boxes according to the invention;

FIG. 4 shows nine boxes interconnected into one block;

FIG. 5 is a detailed plan view of the back wall of one of the boxes;

FIG. 6 is a cross-sectional view taken along line **6—6** of FIG. 5;

FIG. 7 is a cross-sectional view taken along section **7—7** of FIG. 5; and,

FIG. 8 is a cross-sectional view taken along section **8—8** of FIG. 6.

With reference to FIG. 4, it can be seen that nine rectangular boxes having seven different sizes **1–7** are connected with each other into one storage block. Each box contains one drawer slideably inserted into it. The handles **8** monuted on the front of these drawers are clearly shown in FIGS. 1–3.

In order to keep boxes **1–7** in a detachable but rigid position so that they cannot move with respect to each other, the four side walls of the boxes are provided with engaging profiles **10** positioned parallel with respect to each other and having parallel ribs **12** therebetween as shown in detail in FIG. 8. Profiles **10** have approximately the same width as their corresponding ribs **12** to permit engagement with each other.

The boxes are also provided with notched cutouts **16** at the front end of their profile portions **10** and similar cutouts **14** on the back end of profiles **10**. Each box also includes an elastic back plate **18** having portions which extend slightly above two adjacent box walls at the ends of the box. The projecting ends of plate contain corresponding notched cutouts **14**. Back plate **18** is attached to the back wall of the box by means of short hook-like lugs **28** and **29**, formed in slots **30** and **32** which extent through corresponding slots **31** and **33** in the back wall of the box, and engage slots **31** and **33** inside the box in opposite directions as shown in detail in FIGS. 5, 6, 7, and 8. Holes **27** are also provided in plate **18** which communicate with corresponding holes in the back wall of the box. Slots **30** and **32** which are located below the extending portions of back plate **18** also serve to increase the elasticity of the plate.

The boxes may be connected tc each other by first engaging cutout notches **16** at the front of the boxes by moving the upper box along the direction of arrow **20** as shown in FIG. 1. The rear cutout notches **14** are then engaged by pressing downward on the upper box as shown

by the direction of arrow **22** in FIG. 2. When cutout **14** of the upper box contacts its corresponding cutout **14** on plate **18**, the elastic plate will momentarily bend backward to let the upper cutout pass through before snapping closed.

To disengage the boxes containing the drawers, the upper box is urged against plate **18** as indicated by arrow **26** so as to permit the front portion to be raised in the direction of arrow **24**, in FIG. 3.

The plate may also include slits in the area extending beyond the box wall to increase its elasticity. The engaging cutouts **14** and **16** are preferably formed with a saw tooth cross-section to provide a gap free engagement of the interconnecting boxes.

While only a single embodiment of the present invention has been shown and described, it will be understood that many other changes and modifications may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. A box for multiple engagement with similar boxes for the storage of articles comprising;

first cutout means disposed on the front of the box,

an elastic back plate secured to the rear wall of the box and having at least one extending portion,

second cutout means disposed on the extending portion of said back plate, and

third cutout means disposed on the rear wall of the box so that said cutout means engage and connect to corresponding cutout means of similarly constructed boxes which are adjacently mounted.

2. The box as recited in claim **1** wherein said first cutout means comprise notched cutouts disposed on the upper and lower front edges of the box.

3. The box as recited in claim **1** wherein said back plate additionally comprises a second extending portion adjacent to said original extending portion.

4. The box as recited in claim **3** wherein said second extending means comprises notched cutouts disposed on each of the extending portions of said back plate.

5. The box as recited in claim **1** additionally comprising profile means disposed on at least one side of the box.

6. The box as recited in claim **5** wherein said profile means comprise profiles and ribs longitudinally disposed on the side of the box for detachable interlocking engagement with corresponding profile means of adjacently mounted boxes.

7. The box as recited in claim **1** wherein said box includes slots disposed in its back wall, and said back plate comprises hook-like lugs for engagement through said slots, said lugs engaging said slots in opposite directions.

8. The box as recited in claim **7** wherein said back plate comprises slots for increasing the elasticity of said plate.

9. The box as recited in claim **1** wherein said third cutout means comprises at least one notched cutout disposed along at least one edge of the rear wall of said box.

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U.S. Cl. X.R.

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